TEXTILE READER'S GUIDE

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TEXTILE TECHNOLOGY DIGEST is published monthly by the Institute of Textile Technology, Charlottesville, Virginia. In preparing these abstracts, the editorial staff seeks to report correctly the contents of the original papers without reflecting the views of the staff or the members of the Institute. Printed in the U. S. A.

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Abstracts

[979]

FIBERS A

Natural fibers A 1

Cotton breeder research saves millions for mills

Journal of Commerce, N. Y. (May 19, 1952), page 18.

See front section.

Cotton's minor constituents

Carrol L. Hoffpauir. *Textile Industries 116*, 109-112 (August, 1952).

A review of cotton's complex chemical substances shows that there are many noncellulosic constituents in the fiber which is described as our richest native source of cellulose. If the manufacturing operations for producing finished goods are to be improved, a better understanding of these minor constituents must be obtained. Several of the findings of this paper are said to have considerable practical significance. For example:

(1) Wax in cotton serves as a lubricant for the fiber and is necessary for proper preparation of cotton for spinning. If wax is removed, cotton accumulates static electricity.

(2) Removal of the wax after the yarn is spun increases the tensile strength of yarns and fabrics.

(3) Protein in cotton appears to have only minor effect on the dyeing properties. However, a high content of nitrogen in finished fabrics, due to pour scouring, is said to favor damage by bacteria and molds.

(4) Ash alkalinity and pH are useful indices of extreme field deterioration.

(5) About 85% of the ash may be removed from the fiber by extraction with water, but most of the calcium, magnesium, iron, and aluminum remain.

(6) Total sugar content ranges from 0.05 to 0.25%; however these materials are soluble in water and are removed in scouring.

Cotton standards changes rapped by textile mills

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The great adventure of fiber structure

Anon. *Textile Recorder 71,* 93 (June 1952).

That the most important and most persistently exciting theme running through the science and technology of fibers was that of molecular chain folding and the interpretation of elastic properties, was stressed by Professor W. T. Astbury. He explained briefly how the adventure of fiber structure was made possible through a cooperative effort of biology, technology, physics, chemistry and medicine.

Artificial Fibers A 2

Properties of wool-nylon blends

Anon. *Textile Recorder 71,* 86 (June 1952).

There was a substantial linear relationship between yarn or fabric breaking load and the percentage of nylon in the blend. There was little to choose between the all-wool fabric, the fabric containing 75 per cent wool, 25 per cent nylon staple and that containing equal proportions of wool and nylon staple, as far as handling characteristics are concerned. The general trend was for the abrasion resistance to increase linearly with increasing content of nylon staple.

Acrylonitrile-vinylpyridine copolymers

duPont. *J. Soc. of Dyers and Cols. 68,* 194, B. P. 666,716 (May 1952).

Fiber-forming polymers, readily dyed by standard commercial techniques with acid and direct cotton dyes of relatively low molecular weight are obtained by adjusting a mixture of acrylonitrile (98-92) and vinylpyridine (2-8) to pH 4.0-5.9 and heating in the presence of a catalyst, e.g., ammonium persulphate.

Carboxymethyl ethers

Wm. F. Fillbert (to E. I. duPont de Nemours and Co.), U. S. P. 2,599,620, June 10, 1952).

A process for producing finely divided water-soluble alkali metal salts of carboxymethyl ethers of starches and polyuronides, such as gums and hemicelluloses.

Effect of the newer fibers on the market for viscose

J. G. Goldberg. *Textile Manufacturer 78,* 257-259 (May, 1952).

This article is a brief review of the many admirable features of viscose, and the advantages and merits of most of the newer fibers. It

is claimed that nylon has no equal in resistance to abrasion. Dacron shows promise of contributing to the "liveliness" and shape-holding properties of viscose fabrics. Vicara possesses such attributes as softness, warmth to touch and resilience. Dynel has many unusual properties which can be utilized to modify the handle and performance of viscose.

German producer develops fiber

Daily News Record, p. 27 (July 10, 1952).

Phrix of Hamburg is developing a polyacrylonitrile fiber, Redon, made by a dry spinning process. Many of Redon's properties are said to be similar to those of Orlon acrylic fiber, although the former has greater elongation and and undulation elasticity. Light-fastness is given as one of its properties. Also, emphasized are low moisture absorption, resistance to chemicals and heat retention.

YARN PRODUCTION B

Fiber Preparation B 1

Bruck mills installs fiber conditioning

Daily News Record, June 16, 1952 page 26.

See front section.

New fiber conditioning machine

Raymond E. Getchell (to B. F. Perkins & Son, Inc.), U. S. P. 2,589,797 (March 18, 1952).

Sss front section.

Two new wool blending systems

Harmon B. Riehl, Textile Industries, page 114, 115, 116 (August 1952).

See front section.

Carding and Combing B 2

Alabama TOE discusses means to higher card production

Anon. *Textile World 102,* 113 (August, 1952).

Alabama Textile Operating Executives revealed methods of increasing card production at their Spring Meeting discussion which was digested by this Textile World article. High lickerin speeds, metallic drawing rolls, antifriction top rolls on roving frames were some of the subjects about which the mills gave their experi-

ence. The article gave a box illustration on how to increase capacity of present card-sliver cans. (See front section for this concise summary of the four methods reported.)

Carding development

Geo. Clapperton (Nuclotex Ltd.), U. S. P. 2,600,969 (June 17, 1952).

An improved card having a secondary lickerin roll of smaller diameter and operating at greater peripheral speed arranged below the primary lickerin roller. The secondary roller removes the fibers from the primary roller and delivers them to the card.

How to increase capacity of present card-sliver cans

Anon. *Textile World 102,* 113 (August, 1952).

See front section.

Major problems in woolen carding

P. P. Townsend. *Textile Recorder 71,* 91-3 (June 1952).

In this critical analysis of a process which has remained basically unchanged for two- hundred years, the author discusses certain fundamental questions including that of evolving an entirely new and more satisfactory method of doing the work. The main topics of his discus sion are (1) no change in basic principles, (2) can the card be displaced, (3) factors in successful carding (4) assessing a carded web, (5) Garnett versus card wire, (6) what type of tooth, (7) the problem of fettling frequency, (8) rates of production, and (9) fancy and doffer efficiencies.

A new brush for card flats

Anon. *Textile Recorder 71,* 106 (June 1952).

An undercard flat clearer brush has recently been introduced by an English company. The new development is a circular brush which passes the full length of the card flats and is comprised of six rows of brushes, built up on a circular body, with each row fitting into thehollows inside theflats. The brush rotates slowly with the travel of the flats and the material of which it is made is such that it will collect dirt and fly which lodges inside the flats and, at the same time, keep the flat ends clean.

Proper ginning can reduce neps 25%

Daily News Record, June 16, 1952, page 23.

See front section.

Tips on carding and combing of wool-and-synthetic blends

Michael J. Koroskys. *Textile World 102,* 126, 214 (August, 1952).

Practical-suggestion-type article highlights some of the spots to watch when running wool-and-synthetic blends. Some of those discussed include: (1) bad carding practices will load the stock with neps; (2) humidity must be controlled largely to suit the finish put on the fiber by the manufacturer; (3) hot circles on combs can turn some synthetic into a sticky goo; (4) watch the dabbing, since some synthetics will pack instead of springing back as wool does.

Variable-speed intermediate feed improves card roving

A. G. Klock and C. W. Carter. *Textile World 102,* (July, 1952), page 105-107.

See front section.

What's being done about static electricity?

Sidney M. Edelstein. *Textile World 102,* 133, 135 (August, 1952).

From the mill man's point of view, the author lists 15 different questions about static electricity and gives the best answer possible by today's standards. Most of the questions are basic, a fact emphasized by the author's statement that we know no more today about static electricity than we did 300 years ago.

Wool combing machine

James Eastwood (to Eva Eastwood) U. S. P. 2,596,540 (May 13, 1952).

In a wool combing machine of the class described including a frame and provided with annular combing plates having annularly arranged concentric rows of pins, and a set of plows mounted between the rows of pins, each plow having at its upper back end a recess with parallel top and bottom edges, a supporting stand carried by the frame and positioned inside an annular combing plate, and an arm carried by such stand so as to project over part of the combing plate with a portion having parallel top and bottom surfaces extending through the recesses in a set of plows with a close fit at the top and bottom edges of the recesses and means to adjust the arm and a set of plows with the bottom edges of the plow proximate but not touching the top face of the plate.

Drafting and Roving B 3

Draw frame stop motion

Dominion Textile Co. Ltd. *Textile Manufacturer 78,* 273 (May, 1952).

An electric stop motion for drawing frames having sliver condensers. In an example, the sliver condensing rolls 14 and 16 are placed in pairs on the shafts, the rolls being disposed between pairs of clamping members 18. Insulated driving gears drive the rolls in opposite directions. The amount of pressure which is exerted between the rollers 14 and 16 is adjustable. The sliver is introduced in the groove 24, the sliver being compressed in the groove, maintains electrical conducting portions 38 and members 28 in spaced relationship. Upon breakage or exhaustion of the sliver the spring 48 is exerting sufficient pressure through the bearing 44 on the shafts to bring the electrical contacting portions 38 and members 28 into contact which closes the circuit, thereby operating a stop apparatus for the frame.

New roving frame

Daily News Record, June 16, 1952, page 24.

See front section.

Textile machine

Jose Dotti (to Euterio Lorenzo Dotti), U. S. P. 2,596,764 (May 13, 1952).

In a drawing frame for a textile machine, a pair of spaced parallel endless flexible carriers a series of combs extending transversely between the flexible carriers and supported with both their ends by the carriers, fixed horizontal gulde means over which a portion of the endless carriers is moved, means for moving the endless carriers in their longitudinal direction, a second pair of spaced parallel endless flexible carriers of greater length than and positioned exteriorly of the first mentioned pair of endless carriers, a series of transverse rods mounted in spaced relation between the second pair of endless carriers and supported by the same, means for driving the second pair of endless carriers, the second pair of endless carriers being arranged to surround the first mentioned pair of endless carriers in such a manner that the rods enter the space between the combs on the first mentioned pair of carriers when the latter move over the fixed horizontal guide means and that the combs when moving off one end of the guide means slidably engage the rods to thereby remove any fibrous material adhering to the combs.

Spinning B 4

A small yarn mill cut labor costs 33%

P. M. Thomas, page 87, 88, 89 (August 1952).

See front section.

American system produces quality yarns for 10 cents per pound less

Robert J. McConnell. *Textile World 102,* 108, 220 (August, 1952).

The three major worsted-machinery manufacturers were asked by the AATT to submit the principal results obtained from their systems of manufacture. The present one submitted by Whitin Machine Works deals with the American system of manufacture. The article was based upon a large number of American system installations, despite the fact that the system is only five years old. Approximately 15% of worsted spindles now operating are with American-system types of equipment or drafting mechanism.

Main advantages of the American system: (1) the yarns produced by this system are equal in quality to Bradford-system yarns; (2) the new system is more flexible; (3) rovers require less twist, and as a result, production is higher; (4) higher drafts are permitted by the system; (5) cost o 36s is 10 cents a pound less.

French system offers flexibility, ability to compete

Victor Saxl. *Textile World 102,* 102-105 (August, 1952).

Asked by the AATT to submit the results obtained from each of the three major worsted-spinning systems, the machinery manufacturers presented detailed analyses of the French, American, and Modified-Bradford systems, the following one being applicable to the French system.

The French system was said to have certain advantages: (1) pin control throughout all drawing processes, constant control of short and long fibers; (2) fibers from 7 to 10 in. can be processed; (3) tops with higher coefficient of variation and cheaper tops can be used, and no rigid staple length or square staple are required; (4) animal fibers, synthetics, and silk can be processed; (5) well-blended yarns result from from constant doublings and the use of untwisted fibers; (6) from very low to the finest counts of yarn can be spun; (7) excellent evenness, great strength, and elasticity of yarn.

Modified Bradford system requires fewer machines, operators

Harold V. Farnsworth. *Textile World 102,* 106-107 (August, 1952).

In cooperation with the AATT, the following high points regarding the use of the Modified-Bradford system were cited:

In the modified system, the number of operations are reduced by two, the number of operators are reduced by three, and the amount of waste by 50%. Fiber lengths from 3½ to 8 inches in length are processed by the system, but the wide variety of fibers that can be dealt with in the drawing machinery is limited by certain technical details of the machine, so that it is not possible to have a universal set that will do everything.

Production of spun yarns

William Whitehead, John B. Steiding, Leo B. Brown and William L. Rooney (to Celanese Corporation of America) U. S. P. 2,581,566 (May 13, 1952).

In a process for producing spun yarns and the like of high-tenacity regenerated cellulose staple fibers from a tow of stretched continuous filament having a basis of an organic acid ester of cellulose, the steps which comprise breaker-drafting the tow while the fiiaments are in an unplasticized state to convert the continuous filaments into fibers of staple length, and saponifying the fibers to convert the organic acid ester of cellulose to regenerated cellulose.

Six things to look for in your twister-ring grease

T. G. Roehner. *Textile World 102,* 119, 229 (August, 1952).

Grease problems are solved as far as the twister ring is concerned when you pick the right grease and use the best method of application. Mechanical application is more costly than the hand method, but advantages of the former include savings in labor, increased traveler and ring life, lower grease consumption, and improved cleanliness of frame. Pertinent factors to watch in considering a grease are listed as follows: flow characteristics, stability, film strength, ease of application, and color.

Spinning, twisting, and like apparatus

Ralph Ragan U. S. P. 2,596,172 (May 13, 1952).

In apparatus of the class described, a hollow pot to be mounted for rotation upon a vertically

disposed rotatable spindle, a driving drum horizontally positioned and mounted for rotation in the pot, air vanes secured to the drum, means arranged to direct air from outside the pot onto the air vanes to rotate the drum, means on the drum for rece iving and guiding fibers, and a vertically moveable winding cylinder being positioned above the driving drum and in peripheral contact therewith to be driven thereby, whereby fibers from the drum can be wound upon the cylinder.

STA men give answers on spinning problems

Anon. *Textile World 102,* (July, 1952) page 113.

See front section.

Top roll structure

Victor A. Hansen (to Precision Gear and Machine Co. Inc.), U. S. P. 2,596,334 (May 13, 1952).

An improved top roll mounting for spinning frames, drawing frames and the like, the frames having bearing blocks thereon provided with grooves in the upper ends thereof, the improved mounting comprising a shaft having a first and second reduced end portion at opposed ends thereof, the top roll having a bore in each end thereof, the first of the reduced end portions being adapted to be pressed into the bore in the corresponding end of the top roll, a bearing housing surrounding the second reduced end portion of the shaft, the housing having a plurality of axially alined bores of varying diameter therein to form shoulders therin, a roller bearing pressed into an intermediate one of the bores in the housing, an annular sealing ring pressed into an outermost of the bores at the root of the second reduced end portion of the shaft, a radical bearing member pressed into an enlarged end bore at the opposite end of the housing from that in which the sealing ring is disposed, the inner diameter of the radical bearing being substantially less than that of the second reduced end portion of the shaft and against which the second reduced end portion of the shaft is adapted to be disposed when the second reduced end portion is inserted in the housing, the shaft having a third relatively smaller reduced end portion projecting beyond the second reduced end portion and through the radical bearing member, means securing the third reduced end portion of the shaft in the radical bearing member, an end member fixedly mounted in the same bore in the end of

the housing in which the radical bearing is disposed and projecting outwardly substantially therefrom, the end portion having flattened opposed sides thereon adapted to fit in the groove of the corresponding bearing block on the frame whereby, the end member and the housing will remain stationary as the frame rotates in the bearing housing and as the top roll rotates therewith.

Viscose creping yarn

Rudolph Woodell (E. I. duPont de Nemours and Co.), U. S. P. 2,602,285 (July 8, 1952).

A regenerated cellulose yarn having high orientation, high crystallinity and low shrinkage is combined with one having a low orientation and low crystallinity and higher shrinkage than the first on a direct spinner to provide a yarn having creeping properties.

Winding and spooling B 5

Stretching automatic motions to the limit

Anon. Textile Industries, page 100, 101 102 103 (August 1952).

See front section.

The new Muschamp "Supercop" winder

Anon. *Textile Manufacturer 78,* 160-261 (May, 1952).

Every spindle in this new machine is an independent unit, and standard machines are normally 4, 6 or 8 spindles per section according to the spindle pitch, with up to 10 sections per frame. Standard machines have been built in two models, to produce cops up to 16 ins. and 11 ins. long and 2 ins. dia. In special circumstances cops up to 20 in. x 2 in. can be produced.

The use of this machine will, it is claimed, give not only a sound cop but also an increase of up to 50% in the quantity of yarn which can be contained in the shuttle. The setting of the machine for diameter and length of cop is so accurate that the full internal cavity of the shuttle can be used without fear of affecting the unwinding of the cop during weaving of of damage to the yarn. An excellent feature of the new machine is the spindle drive and mounting, which is of entirely new conception. When for any reason the spindle is stopped, the driving belt leaves the spindle pulley and moves on to an independent free running carrier pulley. This leaves the spindle completely free to rotate, thus greatly facilitating the piecing of broken ends.

It has, in fact, been found in practice that after only five minutes' tuition a completely unskilled operative can be thoroughly at home with the machine. Power consumption of the machine is very low, although it is, of course, controlled to some extent by the type of yarn in process. In general, it can be based on 15 h.p. per spindle.

Two-for-one type of downtwister

Alejandro Handschin, U. S. P. 2,601,755 (July 1, 1952).

A two-for-one type of downtwister with a magnetic system for reciprocating a traveller within a shell surrounding the take-up package for traversing the yarn thereon.

Unirail uptwister and Uniflex spindle announced by Universal

Anon. *Textile Age 16,* 72 (June, 1952).

Universal Winding Co. announces development of the new Unirail Uptwister and the Uniflex spindle. According to the company, the uptwister promises the advantages of improved yarn quality, better bobbin build, simplified installation, increased production, lower power costs, less maintenance and longer life.

Yarn Application B 9

Rubber thread

Hiram N. Huse, U. S. P. 2,599,390 (June 3, 1952).

As rubber threads are directed to a gold ball winding operation, they are flattened out between a pair of nip rolls so as to stretch the thread both transversely and longitudinally during the winding operation.

Significance of quality control

Anon. *Textile Age 16,* 74-76 (June, 1952).

The term "Quality Control", used more or less freely to describe the effort of management to control or regulate the various components that make up the qualitative structure of a product, probably has never held as much significance for the textile industry as at the present time. A good quality control organization can be an invaluable aid to management in achieving desired results, especially in an industry as highly competitive as textile. Their records and procedures can be used to evaluate new machinery, processes or production. Quality control gives us the tools to make a scientific, dispassionate study of all manufacturing processes and "rings

the bell" when any of these processes get out of line. In a good quality control system unformity is maintained throughout the entire manufacturing cycle.

Various aspects of modern applications of quality control in the textile industry are discussed in this article in condensed versions of some remarks made by leading authorities before the Spring Meeting of the Textile Quality Control Association.

FABRIC PRODUCTION C

Yarn Preparation C 1

Automatic start-stop controller

Anon. Textile Bulletin, page 106, 107 (July 1952).

See front section.

An electronic high speed warping machine

Skinner's Silk & Rayon Record (April, 1952), page 461.

See front section.

Beam storage racks

Frank L. Byrd. *Textile Industries 116,* 104-105 (August, 1952).

Beam handling and storage pose a great problem to many mills. This article gives some examples of possible solution to the problems by citing the latest European practice. Several different methods are described and illustrated, including a single-bank, motor driven rack which is used to handle up to 20 narrow loom beams, occupying floor space equivalent to that required by nine beams placed on the floor.

A two-bank rack is also illustrated and described. It is used for section beams and wide loom beams. 40 beams with 30 inch heads can be stored in the space required for 16 beams stored on the floor. The two-bank system is operated by a manual chain hoist, which permits one man to handle full or empty beams without assistance.

In some European mills, beam racks extend from the basement up through several floors, thereby permitting use of the arrangement as an elevator as well as a storage facility. In another mill, such racks are used to transfer equipment from the warper room to the slasher room three floors below, and the rack also serves as a convenient place for full and empty beams.

High speed beaming at low uniform tension

Anon. *Skinner's Silk & Rayon Record 26,* 850 (July, 1952).

Specially designed beaming equipment has been built by F. N. F. Ltd. for their line of warp knitting machinery. Creels of the new beamers are fixed and have no stopmotions. The stopmotion is applied to the headstock itself because of the high speeds built into these beamers. Speeds up to 450 yards per minute are standard.

Infra-red heaters for textile drying must be properly selected

Francis A. Westbrook. *Textile Age 16,* 52-54 (June, 1952).

Electrical infra-red drying, or drying by radiant heat, is being used with success in many instances in the textile industry, but there are also cases where it has not been successful. In many situations this lack of success is due to the fact that the right kind of heating unit has not been installed. Actually there are three types of electrical infra-red heaters and it often happens that where one type is not satisfactory another type will be.

The first of the three types, the glass enclosed filament lamps, comes up to full heat very quickly and is shut off quickly. The lamps are used quite widely and successfully where the travel of the cloth is not too fast. The second type is the open glow unit which operates at high enough temperatures to meet the very quick drying required for a fast moving web. The third type is the metal sheathed radiant heating units consisting of a heating coil inside a metal tube. They come up to full heat more slowly than the glass enclosed filament lamps and the open glow elements and they retain heat longer. However, they may be less economical to operate. The opn glow type in general has a wider scope of applicability.

Mill answers to 16 spinning, warping, and winding questions

Anon. *Textile World 102,* 110-112 (August, 1952).

The Spring Meeting of the Textile Operating Executives of Georgia discussed several technical problems relating to manufacture. This article summarizes the discussion of spinning practices. Several mills reported their experience in the operation or use of the following: the Pneumafil system; overhead cleaning; comparison of synthetic and rubber long-draft aprons with leather apons on Saco-Lowell Roth spinning; ball bearings on cam shafts; antifriction top rolls. Several related questions were discussed: the factors that affect the number of quills required for weave room; the question whether spinners should pick their own rolls; and the mills' ex-

perience in keeping antifriction spindles plumb and in controlling spindle vibration right after doffing.

Slasher dryer using gas developed at SRRL

Anon. Textile World, page 143-144 (August, 1952).

See front section.

Slashing synthetic fibers

G. M. Anderson. *Textile Age 16,* 26-30 (June, 1952).

In achieving the goal of a well sized synthetic warp two problems exist which are (1) the choice of the proper starch base materials and sizing adjuncts to supply abrasion resistance requirements of the specific weave and to be readily removable from the woven fabrics (2) proper physical handling and application of the sizing materials in the slasher room to provide the optimum amount and distribution of size on the yarn. There has been developed an entirely new series of starch base products for sizing with the chemical description of dydroxyl alkyl starch ether gums. This series of products has the properties of low congealing, stable viscosity, high film strength, strong adhesion and much improved removal in desizing with upwards of 95 per cent being removed without benefit of enzyme treatment by a good scouring in the finishing plant. Experience has indicated that the minimum amount of size that provides adequate weaving protection for a given warp will yield the best quality synthetic fiber fabric. In the range of 5 to 8 per cent added weight on synthetic fiber yarn the viscous sizings provide greater abrasion resistance than 5 to 8 per cent added weight from thinner bodied sizings. Should the higher added weights be applied from extremely viscous sizings, excessive coating of the yarn is sure to result, accompanied with breakouts at the front of the slasher, abnormal shedding of fiber both at the slasher and loom, increased loom stops due to knots and gouts breaking out and increased prominence of set marks.

Watch angularity of yarn in warping synthetics

R. F. Dyer, W. G. Faw, and R. L. Beard. *Textile World 102,* 99-101 (August, 1952).

A series of tests were made by the authors to study tension variation, and the results were included in a paper delivered before a recent meeting of the Fiber Society. Generally, the result was stated that high-frequency and long-range variations in tension in warping continuous-filament yarns from cones can be satisfactorily eliminated by conventional tension devices, provided the angularity of the yarn path is held to a minimum. However, compensating tensions showed up best in the tests. The various factors of the test are amply illustrated by tables and figures.

Weaving C 2

A new reed grinding and polishing machine

Anon. *Textile Recorder,* 110 (June, 1952).

The new machine is compact, strong and requires for its operation a space only a little wider than the maximum length of reed to be cleaned. The machine will take all standard lengths and widths of reed and is entirely self contained, requiring only to be connected to the power supply. The machine can also clean a reed without grinding it.

Bobbin guide protector for bobbin changing looms

Anon. *Textile Industries 116,* 117 (August, 1952).

Every time a quill is transferred on the loom, the quill strikes against the bobbin guide. A fixer at Cone Mills, Greensboro, N. C., came up with the idea of making a special metal shield to protect the guides. Most guides formerly had to be replaced because each time the metal rings on the discharged bobbin was the point which struck the protector, resulting in the necessity for replacing a whole protector because of one worn place. The fixer's protector consists of a 15-gauge sheet-steel piece which fits under the lay and over the guide, thus protecting the guide from the blow.

Causes of barre cloth—a survey of 67 mills

Victor E. Hillman. *Textile World 102,* 98, 208 (August, 1952).

Yarns are the major source of barre cloth, according to a survey of 67 mills. Uneven yarns, malfunctioning on the letoff, and faulty take-up motions were reported to be the major causes of this type of defective fabric. The causes are further broken down into their individual elements, such as what part of the let-off or what phase of its function may cause barre effects in the cloth.

A further section is devoted to how the mill can remedy barre effects before weaving, and at the loom. Some of these precautions call for such desirable manufacturing practices as careful

blending of spun-rayon stocks; the use of unform deniers in filament-rayon yarns, and others of similar nature.

Dwell in loom shedding

Herbert Barlow. *Textile Recorder 69*, 87 (May, 1952).

An important part of the shedding cycle of a loom is that in which movement of the heddles is halted or reduced to a negligible extent. In this practical article, dwell obtained with various types of dobby drive and methods by which it may be varied are discussed.

Getting loom lay movement de-synchronized

F. D. Snyder. *Textile Age 16*, 32-33 (June. 1952).

This article describes a new method of electrical control used to overcome vibration problem due to looms being exactly in step as far as their positions are concerned.

Heddle for weaving devices

Paul A. Sperry, U. S. P. 2,596,445 (May 13, 1952).

A heddle for manipulating warp threads of a fabric-weaving device, the heddle comprising a blade-like strip of metal having apertures at opposite ends thereof respectively for fastening the blade-like heddle in a substantially-vertical operationg position, and a relatively-wide aperture in the blade-like heddle between the opposite ends thereof; and warp-engaging means comprising a pair of prongs joined integrally at their respective bases with the bottom edge of the intermediate aperture and in longitudinally-spaced relationship along the bottom edge thereof, the portions of the bottom edge of the relatively-wide aperture which blend the longitudinal sides thereof with the longitudinally-spaced prongs comprising concave edges, the prongs being narrow relative to the aperture and bent outwardly from and on opposite sides respectively of a plane intersecting the oppositely-disposed longitudinal edges of the blade-like heddle.

Heddle raising device for weaving looms

Bruno Schiavon, U. S. P. 2,596,177 (May 13, 1952).

A device for regulating reciprocal movements of heddles, comprising a plurality of cam-controlled levers for moving the heddles, rod members operatively connected to the levers, respectively, block elements engaging respctiv rod members, means adapted to regulate the position of

each block element lengthwise of the respective rod member and relatively to the hespective heddle, and pivot means extending between the respective rod member and heddle and articulating the latter to the respective block elements to therby provide non-rigid connection between the heddles and the cam-controlled levers.

How good are your loomfixers?

W. A. Powell. *Textile World 102*, 122-123 (August, 1952).

A test for loomfixers is shown by photographs and text. The test contains large printed photographs of various loom parts which must be fitted to parts shown in other photographs. The superintendent of the mill uses the test to show the aptitude of smash hands, warp hands, etc., for loomfixing. Such men usually score around 35 or better, if they have good aptitude for fixing, 20 or less if they have no such aptitude. The best loomfixers score 90 to 100; average fixers make 75 to 85 on the test; and poor fixers fall below 75.

Loom check

George H. Hufferd (to The Weatherhead Company) U. S. P. 2,596,483 (May 13, 1952).

In combination in a loom, a lay and rock shaft assembly, a picker stick and means to pivotally mount the picker stick in the loom, a double-acting liquid check device having a housing member rigidly mounted on the assembly, and including a plurality of opposed cylinder members adjustably mounted therein, a horizontally reciprocating double-acting check piston sliding in the housing, a reservoir, by-pass means between each cylinder and the reservoir past the associated piston, an operating arm pivoted in the housing and slidably connected to the piston, and a link pivotally connected to the arm and to the picker stick, the by-pass means being restricted by the associated piston acting to check the picker stick toward the end of its power stroke and its return stroke,' adjustment of the cylinder member regulating the position at which the by-pass means are restricted.

Loom shuttle

Rudolph J. Messier, U. S. P. 2,581,494 (May 13, 1952).

A loom shuttle provided with a bobbin chamber and a threading groove extending forward from the chamber, a threading plate set into the shuttle top at one side of the groove and provided with a flange extending laterally across the groove into overlapping relationship with the

portion of the shuttle at the opposite side of the groove so that the thread must pass over, around, and under the flange in moving into its running position during the threading-up operation, the flange having a thread guiding edge extending diagonally across the groove, the plate being provided near its front and rear ends with lugs extending downwardly from the lower side thereof and the forward thread guiding edge of the plate extending across the path of travel of the thread during the threading-up operation and meeting the lug at a point above the lower end of the lug, the shuttle having a socket in which the front lug is positioned.

Stroboscopic measurements at the loom

William R. Saylor. *Textile Age 16,* 20-22 (June, 1952).

This article describes a new device for studying such operations as the flight of the shuttle, behavior of filling, boxing of shuttle, action of cutter, flexing of picker sticks and other operations of weaving calculated to assist in tracking down improper movement. The Strobolume has been designed for low-repetition-rate work where high light intensities are a must. This instrument can be flashed directly from a contactor and the combination of Strobolume and Magnetic Contacter makes an assembly almost ideally adapted for loom work, revealing the movement of different parts of a loom. Careful observation of the shuttle throughout its traversal of the shed will readily reveal a faulty trajectory or yaw which results in disturbance of the warp ends and attendant blemishes in the woven material. Looping or slapping of the filling as it is delivered from the bobbin in the course of a series of picks can be watched in detail.

Studies in textile design.

"Norwood." *Textile Recorder,* 94-6 (June 1952).

This article is devoted to crepe designs. It describes (1) use of crepe yarn, (2) a classical georgette fabric, (3) a fancy georgette, and (4) a diagonal style.

Tablecloth weaves with cross-border bobbies

J. H. Strong. *Textile Manufacturer 78,* 225-226 (May, 1952).

This article describes examples of some of the many distinctive effects which can be produced in cotton tablecloths where the designs for the borders differ from those in the center. The

patterns, drafts and peg-plans are given for three types of weaves.

Use seven battery gauges to set high-speed looms

W. C. Westbrook. *Textile World 102,* 94-96 (August, 1952).

The result of the use of accurate gauges on high-speed looms are said to be: fewer broken bobbins at the transfer; fewer false changes of full bobbins; fewer warp breakouts from hung bobbins; more production because of fewer loom stops. Rule-of-thumb methods for setting the loom parts are being discarded, and seven gauges are recommended as follows: the lay-centering gauge; the lay-height gauge; the lay gauge; the battery-height gauge; the battery-lateral gauge.

STANDARD FINISHING D

Crease and soil resistant cottons

Staff. *Textile Industries 116,* 99 (August, 1952).

A survey of the retail piece goods trade has been made by the National Cotton Council, reflecting the size and importance of this market for cotton goods. The results of the survey were combined into a report called "Cotton in the Retail Piece Goods", copies of which may be obtained from the National Cotton Council, P.O. Box 18, Memphis 1, Tenn. These results were summarized in the current article, which was highlighted by the revelation that consumer demands for crease and soil resistant cottons are being intensified.

Electric calender improves ribbon finishing

E. Dalton White. *Textile World 102,* 90-92 August, 1952).

Conversion of a flame-heated calender to electric heat and controls increased production and improved finishing quality at Classe Ribbon Works, Anniston, Ala. Heat controls has range of 200 to 450 deg. F., and 17.5 by 7 inch calender rolls are heated with 3,200 watts. Advantages claimed for new heating and control system: calender does not require constant attention and frequent adjustment; straight-line production operation can be used with the calender, or the latter can be by-passed, depending on the nature of the goods; uniform quality in finish and color are assured; temperature can be set and maintained within narrow limits.

Detailed descriptions of the calender, heating system, and controls are supplemented by nu-

merous photographs of the operations. Before conversion of the calender, the mill used gas-fired drums by means a horizontal perforated tube.

Finishing with the urea formaldehyde resins

J. J. Bernard. *Textile Industries 116,* 118-120 (August, 1952).

A review is made of the use of monomeric condensation products of urea and formaldehyde in the treatment of viscose rayon fabrics. Urea resins are currently used on rayon fabrics for the following: Shrinkage control, wrinkle resistance, stretch resistance, anti-slip finishes, and durable hand modifications. Cotton fabrics treatments with urea resins are as follows: durable embossing, durable glazing, wrinkle resistance, and shrinkage control. These resins also impart the following properties: improved rot resistance, improved wet and dry strength to rayon only, lower water absorption and quicker drying, higher wet abrasion resistance and durability to laundering, improved washfastness of direct dyestuffs.

The brown line is destructive

Anon. *Textile World 102,* 139 (August, 1952).

This article is condensed from "Effect of Moisture and Ozone on Cotton Textiles", published by National Bureau of Standards, Technical Reports Section, Washington 25, D. C. The study shows the importance of drying goods before storage so that the so-called "brown line" will not degrade the cotton. This line is formed when water evaporates from cellulosic cloth.

DYEING AND PRINTING E

Affinity of acetylated viscose for dyes

Claude Mayrargue and Rene A. Paris. *Crompt. Rendus No. 25,* 2452-4 (1952); *in French.*

It has been verified, as it has been observed for cellulose acetate which has been progressively deacetylated by homogenous saponification, that the affinity with respect to the direct dyeing of progressively acetylated viscose passes through a maximum which corresponds to the rate of solvation by water.

Color fastness of dyed acetate

A. Greyborn. *Can. Textile J. 69,* 64, 67 (1952).

Description of new apparatus and test methods used by the author in determining color fastness of dyed acetate is of special significance.

Color shading and grading

Warren B. Reese. Textile Industries, pages 87, 88, 89, 90 (August 1952).

See front section.

Continuous fiber dyeing

S. H. Williams. *Amer. Dyestuff Reporter 41,* 360-64 (June 9, 1952).

A machine has been developed for continuous fiber dyeing in which the textile material is conveyed through a well unit while it is held in the form of a thin sheet between two mesh belts. The dyeing liquor in the well unit is contained in a narrow slot through which the sheet of fiber stock travels Passage time through one unit is controllable from 10 to 90 sec. Outside the machine, sprays are provided by which the stock can be rinsed with hot or cold fresh water or with chemical solutions.

Dyeing with pigment coloring matter

Glenn F. Womble (to Dan River Mills, Inc.), U. S. P. 2,596,192 (May 13, 1952).

The process of increasing the depth and brilliance of resin-pigment dyed textile material when dry, which comprises pretreating the individual fibers of the material with an unpigmented water-soluble thermosetting resin which will seal the interstices and capillary spaces of the individual fibers without closing the interstices of the material itself and thereby hold substantially all the resin-pigment on the surface of the individual fibers, curing the resin, and subsequently applying the resin-pigment on the fabric.

Faults in textile printing

Anon. *Textile Recorder 69,* 87 (April, 1952).

Faults in textile printing which occur in doctor and lint blades are described, showing the various types of printing faults which can be prevented by better care of these parts. Interference with cleaning by the doctor blade, effects of corrosion, and feathering and flushing are some of the factors discussed in detail.

Factors influencing the fastness of cotton dyeing

Anon. *Textile Manufacturer 78,* 255-256 (May, 1952).

Cotton cellulose was known to be built up from chains of long linear molecules having re-

active centers, viz., OH groups, at regular intervals along the chains and it was here that the dyestuff probably became attached to the fiber. A water soluble dye which could be attached to cellulose in this way stood a good chance of exhibiting some useful fastness properties. During the soda boiling process conditions were favorable for the reduction of many dyes; cotton cellulose behaving as a reducing agent. For this reason, it was essential to select dyestuffs which were difficult to reduce. The pH value of dyed cotton goods, i. e. due to after treatment and finishing processes, may have a marked influence on the light fastness of many dyes. It was found that not all dyes were grossly affected by pH conditions but several direct cotton dyes showed a decrease in light fastness on either side of neutrality. Alkalinity should be avoided in finished goods and neutrality should be aimed at if the maximum exposure life of a dye fabric was to be obtained.

New developments in dyeing cellulose-acetate yarn

D. G. Carmichael and Wm. R. Ivey, Jr.; *Amer. Dyestuff Reptr. 41,* 424-5, 428 (July 7, 1952).

The paper explains how to apply naphthols and fast color bases simultaneously on acetate yarn in circulating machines, then to diazotise the base and permit coupling in a second step. This special technique differs from the method for rayon and cotton. Such dyeings display very good fastness to both light and washing.

$40,000 solves dyehouse waste-disposal problem

Clarence F. Lamb, Textile World, page 118, 218 (August 1952).

See front section.

SPECIAL FINISHING F

Apparatus for impregnating rayon with latex

Merrill E. Hansen (B. F. Goodrich Co.), U. S. P. 2,601,394 (June 24, 1952).

Apparatus for the impregnation of a cord, such as rayon with various materials, such as latex, which comprises a container for the impregnate and a pair of nip rolls for feeding and withdrawing the cord tension there-between as it passes through the impregnate. The nip feeding rolls are axially reciprocable relative to one another.

Bonding vulcanized rubber to fabrics

Z. Bartha, Z. Bruckner, G. Schay, P. Szor. *Magyar Kem. Folyoirat 56,* 245-59 (1950); Rubber Abs. *30,* 194 (May 1952).

Treatment of a mixture of smoked sheet, resorcinal, hexamethylene tetramine, and mercaptobenzthiazole gave an ethanol-soluble rubber-resorcinol resin. Evidence was found of actual chemical bonding between rubber and the resorcinal resin. The mechanism of the reaction is discussed. Rayon immersed into the solution of the resin product, and processed by the usual vulcanizing ingredients, showed an adhesion to rubber much superior to other known adhesives. These properties are of practical significance in tire manufacture.

Bonding sponge rubber to fabric

F. H. Mason and S. C. Schott (Firestone Tire and Rubber Co.); Rubber Abs. *30,* No. 5, 172 (May 1952), B. P. 666,556 (February 13, 1952).

In bonding sponge rubber to a woven fabric, frothed latex is applied to the fabric surface so that it penetrates the interstices and the mix and fabric are then subjected to high-frequency electrical energy for a period sufficient to effect vulcanization of the frothed mix. Di-electric heating may be similarly used to back a rug with sponge rubber. For upholstery use, fabric is formed in the shape of an upwardly turned mould, frothed latex poured in, and dielectric heating applied to affect vulcanization.

Creaseproofing cellulose textiles with glucose—ureide formaldehyde condensation product

Hendrik W. Meijer. U. S. P. 2,596,268 (May 13, 1952).

A process for chemically fixing onto cellulose fibers a ureide selected from the group consisting of the ureides of the methylol-ketoses and methylol-aldoses, which comprises treating the cellulose fibers at a pH between 1 and 2 with the ureide in the presence of a member selected from the group consisting of formaldehyde and formaldehyde-yielding compounds, at a temperature of about 90° C. whereby the resultant chemical linkage with the cellulose is permanent and fast to washing.

Flame-resistant and water-repellent agents

Ohio-Apex. *J. Soc. of Dyers and Cols. 68,* 187 (May 1952), B. P. 666,560.

Compounds of formula $CO(O\text{-}CH_2\text{-}Ar)_2$ are obtained by treating an arylmethyl chloride with

Na_2CO_3 or $NaHCO_3$ in presence of a catalyst. They are insensitive to water and compatible with natural and synthetic resins. They can be used in rendering textiles flame-resistant and water-repellent.

Increasing the resilience of acetate rayon

Celanese Corp. of America, Brit. P. 666,368, *J. of Soc. of Dyers and Cols. 68,* 196 (May 1952).

Yarns and fabrics containing acetate rayon staple of acetyl value 49-57% and saponified acetate staple of acetyl value 42-45% are rendered more resilient by heating and pressing them in presence of moisture, e.g. by calendering the moist yarn or fabric at 150-200° C.

Machine for heat-treating textile materials

Werner P. Rose (to Werner Machine Co.), U. S. P. 2,599,486 (June 3, 1952).

A machine for heat-treating textile materials, particularly for the setting of woven nylon fabrics utilizing a minimum number of hot rolls heated internally about which the fabric is passed and provided with a cooling roll for setting the heat-treated fabric.

Phosphorus compounds as fire retardants

Anon. *Textile Recorder 70,* 90 (June 1952).

Greater fire-resistance could be imparted to textiles through the use of some of the newer phosphorous compounds. The compounds possessed the advantage of greatly retarding both flame and glow propagation so that materials impregnated with relatively small amounts of these compounds were rendered both flame and glow resistant when exposed to ignition or heat sources, thus helping to prevent the spread of fire.

Resin aftertreatments of direct cotton dyes

G. H. Lister. *Textile Recorder 69,* 85 (April, 1952).

This article discusses some of the technical considerations arising from investigations into the use of cationic resins for increasing the wash fastness of direct cotton dyes.

Newer types of cationic resins have very much improved the chance of obtaining with a direct cotton dye a fastness to a non-bleaching alkaline washing treatment equal to that of a vat dye.

These newer ersins, while cationic in character, react with a far more limited range of dyes

than do the compounds of the type of cetyl pyridinium bromide and, although some improvement in washing fastness is brought about with most dyes, a selected and specially constituted range will give dyeings which will withstand an alkaline soaping treatment at 90° C.

Rotproofing jute textiles

H. Chatterjee and K. B. Pal. *Textile Manufacturer 78,* 228-231 (June, 1952).

The weathering and burial characteristics of jute ply-yarn, impregnated with copper singly, and iron and chromium compounds in combination with copper, have been studied. Copper treatment alone affords considerable protection against deterioration by weather and soil burial, as judged by the loss of breaking strength. The rot-proofing efficiency of copper is improved by the incorporation of iron and chromium into the composition. The loss of the treating compound on exposure is not appreciable. The loss of strength with time of burial has been shown graphically. The presence of batching oil in jute yarn seems to afford some protection against soil burial.

Slip agent and water-repellent

David M. McQueen (to E. I. duPont de Nemours and Co.), U. S. P. 2,599,119 (June 3, 1952).

Ethylene/butene-1, 4-dioic acid monoester copolymers which may be used as slip agents for regenerated cellulose film, water repellents for fabrics pre-treated with polyamines and lacquer finishes.

The resin after treatment of direct cotton dyes

G. H. Lister. *Textile Recorder 70,* 89-90 (June 1952).

In this article, the author discusses some of the potential difficulties inherent in resin after treatments and how they may be overcome. The principal subjects discussed are these: the effect of alkali, effect of resin concentration, use of standing liquor, and obtaining a correct shade.

Thermosetting resins

Geo. E. Niles (Monsanto Chemical Co.), U. S. P. 2,601,666 (June 24, 1952).

Improved thermosetting resins having good stability in aqueous solutions capable of imparting wet strength to paper products are obtained by reacting urea, formaldehyde, and an amino aliphatic compound containing from 1 to 6 carbon atoms such as amino ethanoic acid.

Waterproofing lacquer

Pliny O. Tawney (to U. S. Rubber Co.), U. S. P. 2,599,027 (June 3, 1952).

Soluble copolymers of tris-2-alkenyl aconitates and 2-alkenyl alcohols which can be dissolved to form laquers useful as waterproofing compositions.

Water-repellent treatment

Arnoid M. Sookne and Alfred E. Brown (to Harris Research Lab.), U. S. P. 2,599,590 (June 10, 1952).

Proteinaceous textile materials are rendered water-repellent by the application of an aluminum salt and soap.

Zirconium compounds to make textile materials water-repellent

Brit. Rayon and Silk J. 28, 72 (1952), B. P. 669,772 (April 9, 1952), Natl. Lead Co.

An excellent degree of water-repellency having good fastness can be obtained by impregnating material with an aqueous solution of a zirconium compound of a water-soluble fatty acid and then treating the impregnated material s oas to convert the zirconium compound of a water-soluble fatty acid and then treating the impregnated material so as to convert the zirconium compound into a water-insoluble product.

TESTING AND MEASUREMENT G

Instruments and Instrumentation G 2

Abradoflex-abrasion resistance tester

M. C. Shaw. *Textile Manufacturer 78,* 252-255 (May, 1952).

A wearibility tester has been developed for asbestos textiles and other fabrics, particularly of the heavier grades. The destructive actions of abrasion, flexing and creasing are simultaneously applied to cloths under test, and the resulting degradation evaluated in terms of loss in tensile strength.

The tester was designed to include those features deemed necessary to subject textile samples to a reasonably simulative service abrasion and flexural destruction test. The essential parts of the machine are two cylinders, an upper cylinder which serves to hold the specimens during the test and a lower cylinder consisting of a series of four rolls upon three of which are mounted the abrasive materials. The upper cylinder is 6 in. in diameter and is provided with 24 spool clamps by means of which each of

twelve specimens for test may be permanently attached in the form of a loop. The lower cylinders, four in number, are of steel and are 2 in. in diameter, by 3¼ in. long. On the surface of three of these rolls a facing is applied at the beginning of each test. The fourth roll presents a bare steel face for the flexing test evaluations. The distance between the large cylinder and the small cylinder is such that, at the closest points, they are separated by a dimension equal to three times the thickness of the cloth being tested. In operation, both cylinders revolve in the same direction with the upper cylinder rotating at 100 r. p. m. and the small cylinders at 50 r. p. m.

The Abradoflex tester presents a new approach to the problem of evaluating the abrasion-resistant characteristics of textiles. The technique was devised primarily for the determination of the properties as they pertain to asbestos textiles; however, it would seem quite logical to assume that a similar procedure could be adopted in the investigation of other textile materials which may be subjected to similar service requirements.

Industrial yarn classifier

Fred P. Strother. *Electronics 25,* 110-12 (July 1952).

The Filometer is used in the textile industry to measure and record diameter of yarn. It is accurate and more stable than other similar instruments using phototubes. A high-intensity beam of light is so arranged that light is actually transmitted through the material being measured.

Instruments for measuring crease-resistance .....

Amer. *Dyestuff Reptr. 41,* 419-23 (July 7, 1952).

Monsanto's Wrinkle Recovery Tester and American Cyanamid's Roller Pressure Crease Recovery Tester were studied and compared to determine if one or both might be suitable for an AATCC standard method of evaluation of crease resistance. Inasmuch as both instruments give results that are significantly different but which correlate with fabric appearance, both instruments were accepted as tentative standard. A detailed discussion of the testing and results is presented.

Mechanical assessment of fabric handle

Anon. *Skinner's Silk & Rayon Record 26,* 862 (July, 1952).

Quoting the *American Dyestuff Reporter,* this

news item describes the work of a special committee of the AATCC which was designed to establish a simple mechanical method of evaluating the handle of textile fabrics, which incidentally is the subject of a special AATCC report. Several ingenious methods are described in the report, and some are illustrated by this news article. However, none of them are described as being capable of replacing the hand method now being used to evaluate the handle or drape of textile fabrics.

Recording fluctuating tensions in textile yarns

Anon. *Textile Recorder,* 115 (June 1952).

A new unit, called the tension pick-up unit, has recently been developed by Kelvin and Hughes of London to work in conjunction with the company's single channel strain recorder, thus enabling it to be used to provide an instaneous graphic record of tension fluctuations. The unit consists fundamentally of a small cylindrical transducer of the inductance (variable reluctance) type, in which an armature is suspended by spring diaghragms between a pair of coils. Incidentally, the equipment in conjunction with some means for applying a constant rate of extension, can also be used for obtaining load-extension curves for fibers.

Testing for moisture content

Anon. *Textile Manufacturer 78,* 235 (May, 1952).

Specially designed for this exacting work is a conditioning oven recently been introduced by Herget K. -G. of Germany, which the makers claim provides quick drying, exact temperature maintenance and accurate results. The drying chamber is constructed to ensure that the hot air is forced through the contents of the chamber which is automatically and electrically controlled. A heat-accumulator, special switching and a sensitive thermometer provide, it is stated, the greatest possible constancy of temperature. A high capacity radial blower forces air through the heater and then through the contents of the conditioning chamber. To prevent against heat radiation into the room in which the apparatus is placed, the heater has been surrounded by the air intake, so that the air is actually preheated before it enters the actual heater.

This machine helps Hathaway control efficiency and quality

William A. Newell, *Textile World 102,* 87 (July, 1952).

A 1,200-tube electronic calculator can figure

efficiency of or quality produced by any one of Hathaway Mfg. Co.'s 3,300 looms in 0.6 sec., or at the rate of 100 a minute. Hathaway uses this speed to turn out reports that help management put the finger on troubles almost as soon as they happen.

TEXTILE MILLS H

Address of President of Southern Textile Association

J. L. DeLany, Textile Bulletin, page 67, 68 (July 1952).

See front section.

Comments on the results of the 17-mill test on ginning procedures

Walter Regnery. *The Bobbin & Beaker,* 6, 7, 16 Spring issue 1951-52.

See front section.

Good personnel

Daily News Record, page 23, June 16, 1952.

See front section.

Information racks provide helpful service to Huntsville's employees

A. D. Elliott, Textile Industries, page 94-95 (August 1952).

See front section.

Maybe it won't happen in the South

P. M. Thomas. *Textile World 102,* 4 (July, 1952).

See front section.

A new multi-brush air filter

Anon. *Textile Recorder 69,* 110 (June 1952).

This new filter employs as its filtering element a series of brushes which present a screen of finely graded intermingling hairs to intercept and trap dust from the air in its passage through the filter. The materials used in the manufacture of the filter brushes are specially selected to withstand the varying humidity and conditions of dust-laden air. The initial filtering efficiency of the brushes is still retained after cleansing.

The operation of synchronous motors

"Engineer-in-Charge. *Textile Manufacturer 78,* 221-224 (May, 1952).

Synchronous motors are far less common in industry than induction motors, but they are extremely useful for certain purposes. This article

is mainly concerned with the larger two or three phase types built in sizes up to several hundred horse power. The synchronous motor operates at a constant speed irrespective of changes of load, temperature or voltage, when fed from a supply at a constant frequency. These motors are of two main types. The first type consists of fractional horse power motors having no d. c. excitation; there are usually employed to drive non-reversing drives which require a constant speed and which start up light. However, the larger two or three-phase synchronous types are used where a constant speed is required or more often when a high power factor is required in order to keep the load current to a minimum so as to limit cable sizes and/or obtain the benefit of tariff concessions to users at high power factor.

Vacations bring rest and zest to mill towns

Mildred Andrews, *Textile World 102,* 133-188 (July, 1952).

See front section.

Von Bergen slated to receive Olney medal award of AATCC

Anon. Chemical and Engineering News, page 3174 (August 4, 1952).

See front section.

CHEMISTRY AND PHYSICS OF TEXTILE MATERIALS I

Constitution and texture of native cellulose

Kurt Meyer. *Melliand Textilber. 33,* 485-88 (June 1952); *in German.*

Technical cellulose such as wood, pulp and cotton contain more than 90% of "pure cellulose" i.e. the pure polymer 1-4 glucane. The true D.P. is much higher than the conventional (Staudinger) D.P. The cellulose chains are oriented according to a pattern which is very probably represented by the spatial model of Meyer and Misch. All chains are oriented parallel to the fiber axis but the arrangement seems to be more regular within the central than the outer parts of the fiber.

Cottonseed meal as a tire cord-to-rubber adhesive

Wade H. Hoffman, Jr. and Jett C. Arthur, Jr. *Rubber Age 71,* 354-6 (June 1952).

Cottonseed meal is evaluated as an adhesive for bonding rayon tire cord to rubber. On a laboratory scale, solvent-extracted cottonseed meal was shown to compare favorably with case-

in which is a natural adhesive rubber. The viscosities of dips containing cottonseed meal are higher than those of dips containing casein, however, the values are within a usable range for the application of dip to the cord.

Crease properties of fabrics

H. Sommer. *Melliand Textilber. 33,* No. 4, 301 (1952); *in German.*

Mathematical expressions are derived for relating the crease-recovering angle and the resiliency angle. For testing purposes it is sufficient to determine the angle of recovery five or sixty minutes after creasing and from this the angle of resiliency can be calculated, and the crease tendency of a material can be expressed numerically. The relationship between crease-tendency and the tensile properties is also discussed.

Degradation and dissolution of viscose staple during sulphur dyeing

G. Nitschke. *Textilforsch und Textiltech. 3,* 66-72 (February 1952); *J. Soc. of Dyers and Cols. 68,* 228 (June 1952).

The solubilities of two types of vicose staple fiber in typical "blank" sulphide dyebaths are determined and tabulated. The concentration of NA_2S, the temp. and the time are varied. Also, NA_2S is replaced by K_2s. Under the usual dyeing conditions, 2-3% of the rayon is dissolved. It is recommended that dyeing should be followed by very thorough rinsing, and that, if the precaution of finishing in an alkaline solution is taken, then sodium acetate or formate should be used, rather than carbonate.

Delustered rayon

G. Schwen. *Melliand Textilber. 33,* 522-25 (1952); *in German.*

In order to test the fiber tendering influences of TiO_2, 2 series of light-fastness tests were carried out under the conditions prescribed by the Fastness Commission. In these tests, rayon hanks which has not been delustered, or had been delustered either with TiO_2 or with TiO_2 plus "anti-catalysts", were exposed to light. Evaluated on the basis of the deterioration of the D.P. the yarn which had not been delustered proved superior in some respects, whereas in evaluating the dry tensile strength no differences worth mentioning could, on an average, be determined between delustered and non-delustered viscose rayon.

Detergents

D. G. Kerr. *J. Soc. of Dyers and Cols. 68,* 186 (May 1952); B. P. 666,496.

Mixing an ammonium carbonate and an alkali-metal salt of a long-chain paraffin sulphonic acid and/or an alkali-metal acid sulphate of a long-chain aliphatic alcohol gives improved removal of dirt from cellulosic fiber and less hardening of the handle of wool.

Elastic yarns

M. Olivier. *Industrie Text. 68,* 73-4 (February 1951).

An English method of making elastic thread which remains firm during processing, and which is made in a single operation, is described. A rubber core under tension is combined with an unstretchable strand of a textile which is alkali soluble such as alginate thread, cellulose acetate or wool. The two are spirally wound with two layers of cotton, the direction of the spirals being opposite. An unstretchable thread results. After weaving, the fabric is treated with alkali to remove the unstretchable strand, and the fabric becomes elastic.

Enzymatic desizing of fabrics

W. Julicher. *Melliand Textilber. 33,* 511-16 (1952); *in German.*

Comparative investigations carried out on various commercial desizing agents prepared from malt, pancreas, and bacteria indicate that the usual practice of dividing these into alpha-amylases and beta-amylases is not expedient. The author, suggests a return to the former classification in"liquefying" and "Saccharifying" amylases. Comparison of the 3 types of desizing agents shows that textile processes must take the properties of these types more into consideration. At low temperature, bacteria amylase are less effective than the other types, because the degradation products are not water soluble.

Improving the mechanical properties of viscose fibers

M. R. Wirth. *J. of Soc. of Dyers and Cols. 68,* 229 (June 1952), Brit. P. 669,088.

Improved crease and shrink-resistance, handle, and tensile and wet strength are obtained by treatment with a precondensate of dicyandiamide and an aldehyde at pH 6-7 followed by curing. If desired. urea and/or melamine may replace some of the dicyandiamide.

Jig for the liquid treatment of running fabrics

Robert Desider L. Frederick, U. S. P. 2,600,863 (June 17, 1952).

A jig for the liquid treatment of running fabrics provided with a special form of suction pipe past which the fabric is continuously drawn. The suction pipe has adjustable sleeves at its ends to adapt the device to fabrics of various widths.

Measuring static on loose fibers

A. J. Hall. *Textile Mercury 126,* 1009, 1011, 1013 (June 6, 1952).

An apparatus is provided for determining the electric charge which has been developed in loose fiber by carding. The carded sliver is collected in a galvanized iron bucket resting on an insulating block of paraffin wax and the reading on a volt meter can be used to calculate the total electric charge of the sliver in the bucket. Charts are given showing the comparison of various fibers.

Padder, mangle, or squeeze rolls for improved extraction and impregnation of textile fibers, yarns, and fabrics

John F. Keating and Esmond J. Keating (to United States of America as represented by the Secretary of Agriculture), U. S. P. 2,596,154 (May 13, 1952).

In a textile padder having a tank for impregnating liquid and at least two rolls between which fabric, yarn, or fiber is passed after being impregnated in the liquid, the improvement comprising employing, as the rolls, at least two hard-core rolls, each having a coating of thin soft rubber, the thickness of which ranges from 1/16 of an inch to ¼ of an inch, and the hardness of which ranges from 100 to 200 as measured by a Pusey and Jones plastometer (⅛ inch ball), the ratio of thickness of soft rubber to the diameter of the hard core being in the range of 1 of rubber to from 10 to 40 of core.

Shrinkage of cellulosic fabrics

Claude Musset. *Ind. Textile 69,* 103-7 (1952).

Cellulosic fabrics can be stabilized by numerous aliphatic compounds containing 3-6 C and 2 halogen atoms and 1 OH. Preferably 1, 3-dichloro-2-propanol and 2, 3-dichloro-1-propanol are used and the shrink resistance is due to polymeric cross bands between approx. each 30th glucose radical. The reaction is carried out in the presence of NaOH and alkali halides at 80-90°.

Detailed formulas are given for the shrink-proof treatment of viscose, rayon, and cotton fabrics. Its effect is demonstrated by considerably reduced shrinkage in consecutive laundering and by the mostly insignificant change in breaking load and elongation.

Textile assistants

Ciba. *J. Soc. of Dyers and Cols. 68,* 186 (May 1952), B. P. 667,384.

The products obtained by treating an aliphatic mercapto-carboxylic acid with an ester of an unsaturated aliphatic carboxylic acid containing in at least one ester group the residue of a cycloaliphatic alcohol or an aliphatic hydroxy compound containing a chain of >5C are used as textile assistants. Those containing chains of 6-10 C. have good wetting properties, while those having chains of 16-18 C. are softening agents.

The action of ketones on protein polyamide and cellulose fibers

H. Rath, H. Meyer and H. Bierling. *Melliand Textilber. 33,* 427-8 (1952).

The action of carbon suboxide on fibrous materials causes formation of malonic acid derivatives, resulting in changes in the properties of the fiber. Protein and polyamide fibers are thus "resisted" by the carbon suboxide treatment against acid dyestuffs. The swelling properties of both protein and cellulose fibers are changed. Carbomethylene has an acetylating effect on protein, polyamide, and cellulose fibers and changes the fiber properties accordingly.

The effect of light on textile fibers

Hans.-Joachim Henk. *Melliand Textilber. 33,* 388-91 (June 1952); *in German.*

Textile fibers suffer extensive changes in structure by the action of light, especially of rays under 4000A. These changes express themselves in a loss of strength properties and resis- chemical and thermal influences and, in most cases, also in a changed affinity for dyestuffs. The kind and the intensity of this effect of light depend upon humidity, and the temperature. A very significant influence is also exerted by dyestuffs and other compounds contained by the material, as they caused uptake of light into compounds which themselves attack the fiber substance.

The micellar lattice of high-molecular fiber substances

R. Hosemann. Kolloid Z. 125, 149-56 (1952); *in German;* Brit. Cotton Ind. Res. Assoc. *32,* 475 (June 30, 1952).

High-molecular fiber substances, such as cellulose, diffract x-ray at very small angle scattering; their higher orders are, however, often very diffuse. The statistical deviations of the lattice parameter of the miscellar lattice can be calculated in an elementary manner from the quantitative investigation of such "coalesced" diffractions. There are characteristic differences between individual, natural or synthetic substances in the magnitude of these deviations, though at the same time there are certain features in common which are considered. Besides the quasi-crystalline micellar lattices there are the partly crystalline-partly gel-like types, together with intermediate varieties.

The role of the hemicellulose in the mechanism of wet strength

Manuel N. Fineman. *Tappi 35,* 320-4 (1952).

Data are presented which confirm earlier concepts that the alkali-soluble, water-swellable, hemicelluloses are responsible for interfiber bonding and, hence, are a major factor in the strength of paper. The major factor in the mechanism of wet strength is shown to be the insolubilization and reinforcement of these hemicellulosic constituents by the wet-strength additives. The mechanisms of tear strength and of softness in paper are also considered in terms of the role played by the hemicelluloses, and in these properties are suggested.

X-Ray small-angle measurements

H. Janeschitz-Kriegel, O. Kratky and G. Porod. *Z. Elektrochem. 56,* 146-54 (1952); Chem. Abs. *46,* 6377 (1952).

The small-angle scattering of a porous, dry, viscose fiber with a degree of swelling q=5.7, indicates a thin lamellar packet of micell thickness 50 A. The relative thickness fluctuation was calculated to be O. 5 A. The results were verified by measuring the absolute intensity. Lower swelling and thick fibers show a scattering curve indicating the existence of interference phenomena.

TEXTILE EDUCATION AND RESEARCH J

Armed forces reap benefits of Southern Research Laboratory

Daily News Record, page 26, Monday, June 16, 1952.

See front section.

[1014]

Continuous production of high-tenacity rayon staple yarns

Celanese Corp. of America. Brit. P. 667,147, February 27, 1952, *Brit. Rayon and Silk J. 28*, 72 (1952).

A process is described by which a tow of continuous acetate rayon filaments can, in a succession of treatments which comprise one continuous process, be plasticized, stretched, broken into short fibers without losing the continuity of the tow form, and then be fully saponified by alkali, washed, and dried, to yield a roving at once suitable for drawing and twisting into a high-tenacity regenerated cellulose staple yarn.

Research leading to expansion

Anon. *Journal of Commerce,12*, Monday, May 19, 1952.

See front section.

[1015]

The use of statistical methods in research

P. M. Schaffrath. *Tappi 35*, 246-49 (1952).

The purpose of this paper is an attempt to present as briefly and in as non-technical a manner as possible, some of the statistical methods available to the research worker in the pulp and paper industry and to demonstrate some of the advantages which may be gained through the use of a few of these techniques.

Winding at constant tension

Gilber Lauder. *Industrie Text. 68*, 451-54 (1951) ; *in French.*

A new invention for winding at constant tension is described. The thread is passed through holes on either side of a ring before being passed on to the bobbin.

9

Textile Highlights of the Month

MILL ELIMINATES SIZE COOKING AND STORAGE KETTLES

A recent textile installation of warp size preparation equipment completely eliminates cooking and storage kettles and provides a flow of freshly prepared size directly to the slasher size box at the rate of slasher consumption. Although machine methods have previously approached such a system, this is thought to be the first successful commercial application which combines all of the known techniques of the relatively new size preparation process.

A Scott & Williams' "Hydropulse," consisting of a heat exchanger and high pressure homonizer, is automatically operated from a size box level control. The size mix is prepared in the starch storage area in the form of a cold slurry containing starch, water, and water miscible sizing auxiliaries, and the cold mix is circulated to the homogenizer-heat exchanger unit located near the slasher size box. Electrical connections between the probe level controls in the size box actuate the master switch which controls the operation of the unit.

In actual operation the size preparation equipment is operated automatically and intermittently to provide fresh size as the warp sheet picks up size in passing through the level-controlled size vat. The equipment design is unique in that it allows for the on-and-off operation of the homogenizing unit while pressure loaded, and the controlled operation of the heat exchanger prevents overheating and temperature variation in the size as it is furnished to the temperature controlled size box.

Freshly homogenized size can be prepared automatically at any rate from 0 to 2.5 gallons per minute with only 0.8 gallons of size within the processing unit at any time, and with a size box requirement varying from 0 to 2.4 gallons per minute at 100% of slasher efficiency applying 12% added size to the warp yarns.

According to mill officials, other results are:

(1) Elimination of the variations in viscosity and concentration from the condensation of live steam in heating and cooking.

(2) Decreasing the man hours required for size preparation.

(3) Savings in material, labor, and steam costs.

(4) Increased weaving efficiencies and reduced shedding.

(5) Elimination of batch kettle heating and cooking in favor of a continuous flow process.

(6) Reducing the variation in the added size content of slashed yarns.

(*Textile Industries*, September 1952.)

FILLING CONTROL IN WEAVING SYNTHETIC YARNS

No other process in the synthetic-yarn weaving plant is more important than the handling of filling yarns at the loom.

Good filling yarns can be ruined and second-quality cloth made by poor filling settings at the loom. On the other hand, if properly developed loom settings are used to protect the filling, poor yarns can often be made into first-quality cloth.

Dynels, Dacrons, Orlons, nylons, filament-rayon fibers, and various blends of spun-rayon fibers are often run in the same weave on the same type of looms. Filling control is then a big problem.

The most common filling defect in synthetic cloth is slack picks or kinky filling. To prevent slack picks:

1. Check the shuttle gently

Reduce the power on the picker strip by raising the power strap or the pick arm. If the power strap is below a horizontal line from the pick arm, the shuttle will not check gently. It may be necessary to overhaul the picking motion to raise the power strap.

On Draper looms, the pick-cam toe, the pick ball and stud, the short and long lugs, and the pick shaft bearings may have to be replaced.

On C&K looms the picking motion may have to be completely rebuilt. Erratic shuttle boxing can be caused by worn lugs, sweep sticks, and picking rolls and by split picking-roll arms, picking shoes, and picking shaft and shaft stands.

2. Box the shuttle

Set the binders and the binder springs so that the shuttles can be pushed into the shuttle box easily. Too tight shuttle boxes will result in erratic shuttle boxing at the slightest temperature or humidity change.

3. Set the protector motion

Shuttles cannot be boxed accurately and consistently if the protector motion is worn or it set improperly.

Replace worn protector-motion parts on Draper looms-frogs, rod, bearings and caps, and

fingers. On C&K looms, replace bearings and caps, knock-off levers, tension springs, rod, and fingers.

The protector motion should be properly set. Minimum spring tension should be used. The finger clearance must be correct, and the fingers must not lock the binders when the rod is against the top.

4. Set the checkstrap

If the picking motion throws a gentle shuttle, if the binders are set to box the shuttle loosely, and if the protector motion is in good mechanical condition and properly set, the checkstrap will box a shuttle accurately with little effort, and slack picks will not be made from mechanical faults.

5. Time the harness crossing

On filament yarns, the standard harness crossing is from ¼ in. before front center to ¼ in. past front center. This setting locks the pick in the cloth before the shuttle has time to rebound in the shuttle box. A crossing of ⅛ in. past front center is better for most filament-rayon weaves.

The dobby knives must be divided accurately, since the harness-crossing time should be the same when the shuttle is in the shuttle box at the drive end and at the head end of the loom.

Blended spun-rayon suitings with decorative filling checks of filament-rayon yarns are often hard to weave without slack picks at the decorative check.

If the harnesses are set to cross at the regular spun-rayon setting of 2 in. before front center, the filament yarns will kink; and if the harnesses are set to cross near front center to prevent slack picks in the filament yarns, the spun-rayon warp ends will break.

On a combination weave of this kind, care must be taken to wind the filament yarns tightly on the bobbin with a long traverse stroke on the quiller.

The harness crossing should be set to favor the spun-rayon warp yarns.

The shuttle must be furred and the eye tension set to control the filament yarn.

6. Condition the filling

Lively filling—filling that contains a lot of static electricity—cannot be controlled at the loom.

All filling should be conditioned before it is taken to the weave room. Steam chambers with automatic controls are usually used for filling conditioning. A steaming period of 15 min. is often adequate to condition filling properly.

Filling pinboards should not be left on the loom over the week end. The last shift that is operating before a week-end shutdown should let the pinboards on the loom run empty. Early Monday-morning steaming and replacement of filling should precede the starting of the first shift. (Richard B. Pressley, *Textile World*, September, 1952.)

CONTROLLING WOOL CARD ROVING WEIGHTS

A second dimension has been added to the control of card roving weights by a new, low-cost carding device that improves uniformity of sliver across the width of the card.

The mechanism, the Bigelow Card Compensator, has been used under observation for three years at the Thompsonville, Conn., and Amsterdam, N. Y., mills of Bigelow-Sanford Carpet Company, which developed it. It also has been in experimental use for two years at the Albany Felt Company, Albany, N. Y. Tests of these operations show it reduces roving weight variations by approximately 50 per cent.

The compensator can be adapted to cards using any type of broadband feed and adjusted to fit requirements of the individual operation. Compact, it fits on the side of the traveler and is covered by a combined door and safety cover.

It is now being manufactured for sales, under a licensing agreement, by Davis and Furber Machine Company, North Andover, Mass., and Whitin Machine Works, Whitinsville, Mass.

The Bigelow Card Compensator is believed to be the first development for cards using the broadband feed that establishes a control of transverse variations in roving weights. Past refinements have all been longitudinal. An example is the weight pan which improves uniformity lengthwise by metering wool from the feed box.

Another, paradoxically, is the intermediate feed itself. This substantially cancels out longitudinal variations in the weight of sliver by laying it back-and-forth across the width of the card. In doing this, however, it also creates the problem of variation in the transverse weight. The solution of this is the function of the Bigelow Card Compensator.

Its development stems from a study of carding undertaken in the summer of 1948 by engineers in the Quality Control and Product Engineering Departments of Bigelow-Sanford's Thompsonville plant. First they examined longitudinal variations of roving weights, and their findings led to a revised procedure for servicing the feed box.

For the next step, a study of latitudinal variations, they weighed individually each of the 88 roving ends from a simultaneous clipping. This was repeated under a variety of conditions. The

technique was a necessary departure from the textile industry's standard method of weighing all ends together for a "unit of product," because this tells nothing of variations among individual ends.

The tests showed that the weights of roving were heaviest in the center, and dropped toward the sides where some of the ends were below specification. Plotted on a graph, it described a curve like a rainbow. When the carding operation was speeded, this curve became more pronounced.

Further study revealed the problem was in the intermediate feed. The traveler was found to be stretching the delicate sliver as it approached the limits of its back-and-forth movement across the card. Consequently, less sliver was being laid at the sides of the intermediate feed apron.

Two simple experiments verified this condition and its effect on the roving. In one, dyed sliver was laid in the center of the feed apron, on top of the crosswise layers deposited by the traveler. The final roving ends showed only limited dispersion of the colored wool. This was visual proof that the intermediate feed largely established the latitudinal character of the roving.

In the other, extra sliver was dumped manually along the sides of the intermediate feed apron. Tests showed that this action, in the correct proportions, flattened out the undersirable "rainbow" of roving weights. The Bigelow Card Compensator is a mechanical application of this operation.

The Bigelow Card Compensator imposes a cyclic variation on the speed of the traveler, slowing it gradually as it approaches the limits of its cross-wise movement. Since sliver is fed to the traveler at a uniform rate, this lays a longer band at the sides of the feed apron where the traveler's action thins it.

The principle on which the compensator works is that of a variable speed-drive. This is attained by an adjustable sprocket that can be set at varying degrees of eccentricity by set screws. A proper setting will create relative uniformity in the weight of individual roving ends, with all of them well within specification. (Anon. *Textile Age,* page 18 (September 1952.)

VON BERGEN SLATED TO RECEIVE OLNEY MEDAL AWARD OF AATCC

For outstanding achievement in the field of textile chemistry, Werner von Bergen, director of the research and control laboratories of the Forstmann Woolen Co., will receive this November the Olney Medal of the American Association of Textile Chemists and Colorists. To Mr. von Bergen will go recognition not only for his countless contributions to wool technology but also for his vigorous, life-long championing of the cause of chemistry in the world's woolen industry.

Woolen manufacture has come a long way since the early days of Werner von Bergen. As recently as 40 years ago, the textile manufacturer who employed a chemist was obviously an eccentric. Ordinarily, if he hired a chemist at all, it was only to obtain cursory checks on his incoming raw materials. A chemist working inside of a woolen mill—studying, evaluating, and perfecting manufacturing operations—was inconceivable. But then along came men like von Bergen. Through their efforts, chemist know-how and chemical control began to be applied to every step of woolen manufacture—from the first scouring of the crude animal fibers to the final steaming of the finished fabric. Today, the results are chemical history.

The man who has played such a vital part in the transformation of the woolen industry was born in Switzerland in 1897. Originally, von Bergen intended to become an electrical engineer, but father was vehemently opposed. Nine children had to be raised in the von Bergen household, and Papa von Bergen wasn't going to have young Werner spending six years to become an electrical engineer when he could become a chemist in only three. Werner became a chemist.

After graduation from the Technical College at Burgdorf, Switzerland, in 1916, von Bergen joined the Textile Printing Mills at Suhr. Then, after a brief stint in the Governmental Gas Laboratory in Zurich, he accepted a post as chemist in the woolen mill of Pfenninger & Co. in Waedenswil.

As von Bergen quickly discovered, a chemist's life at Pfenninger & Co. was no picnic, particularly since the old-time dyer at the plant had a peculiar habit of getting desperately ill at all the wrong moments. On such occasions, von Bergen had to step in and take his place. Von Bergen could handle the routine dyeing well enough, but when it came to correcting the colors to bring them up to specifications, he was hopelessly lost. In a flurry, he would rush to the dyer's sickbed, where the old man, who was quite fond of the young chemist, would give him a few secret tips to finish the dyeing.

Recognizing his need for more training, von Bergen obtained a leave of absence from Pfenninger to become a dyestuff technician at Bayer & Co. in Leverkusen, Germany. Then in 1926, after returning to Switzerland, von Bergen, seeking still broader professional experience, left the

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continent to take up permanent residence in the U. S. That same year, he became the first chemiist to be hired for the Garfield, N. J., plant of Forstmann Woolen Co.

During his years of research both before and after joining Forstmann, von Bergen made important contributions to wool technology. One of his earliest investigations concerned the fundamental process of wool scouring. During at least one phase of this work, he created quite a stir in the mill by running large-scale experiments on the scouring of raw wool with urine—a cleaning technique once widely used in European mills. Von Bergen's co-workers were no doubt impressed by the inquisitive spirit of the budding chemist but were none the less vocal in their insistence that he channel his talents along other lines.

In the years that followed, von Bergen did pioneering work on the dyeing of wool, the mothproofing of wool, and the imparting of shrink-resistance to the fabric. In addition, he played a prominent role in the textile industry's adoption of precise microscopic methods for the analysis of wool fineness—a property that for centuries had been determined with uncertain accuracy by the artisan's unaided eye.

One of Mr. von Bergen's best known studies concerned the photochemical decomposition of wool while still on the sheep's back. Previously, many a plant operator in charge of wool scouring was threatened with prompt dismissal because a bath had failed to dye properly. The operator, it was assumed, had left too much dirt on the fibers. Von Bergen discovered, however, that often it was not the scourer's fault at all. What had happened was that the sunlight had oxidized the sulfur in the wool to sulfuric acid, thus altering markedly the dyeing properties of the fiber.

Over the years, Mr. von Bergen's professional activities have ranged widely. He has contributed much time and energy to projects of the American Society for Testing Materials, the National Research Council, and the Department of Agriculture's Wool Advisory Committee. For 10 years, he taught extension courses on worsted and woolen manufacture at Columbia University. During World War II, he was a consultant on textiles to the U. S. Army. In fact, within a week after V-E Day, von Bergen, at the Army's request, was at work in Germany investigating the development of Germany's wartime textile industry. His subsequent report on the Germans' use of wool-nylon blends in men's socks was followed within a few months by the commercial introduction of wool-nylon socks in the U. S.

Among his keenest interests at present is the wool project of the Textile Research Institute in Princeton, N. J. Today, he is a group leader in this undertaking, which was started four years ago to determine the fundamental properties of wool and its changes during manufacture.

Von Bergen's nonprofessional interests take other forms. As might be expected of an ex-Swiss and a descendant of a long line of mountain climbers, von Bergen delights in scaling a mountain now and then. Some years ago, he climbed the Matterhorn in Switzerland and has twice made the ascent to the top of the Grand Tetons in Wyoming. On such jaunts, he is quite apt to be found, camera in hand, shooting color and black-and-white. In recent years, his color movies have won local prizes repeatedly.

In the prevailing controversy over the relative merits of the nature fibers and the new synthetics, von Bergen is not one to stand by passively on the sideline. For example, at the fibers symposium held at the ACS Buffalo meeting this spring, von Bergen presented the case for wool. He is convinced that wool's outstanding combination of properties—its high moisture absorption, its marked resilience when both wet and dry, its excellent dyeability, its felting ability, and its resistance to free flaming—is equaled by no other fiber. With men like Werner von Bergen in the forefront, striving tirelessly to make wool an even more effective fiber for human use, you can be sure that nature's wonder Fiber W is definnitely here to stay. (Anon. *Chemical and Engineering News*, page 3174 (August 4, 1952.)

PNEUMASTOP—MILEPOST FOR ROVING FAMES?

A few weeks ago Pneumafil Corp., Charlotte, N. C., took the wraps off a new roving-frame development. Genial "Pete" Harris, president of Pneumafil, grinned at the idea of another "revolution" for the industry; but he said, "We believe we've got a serious problem licked."

The development, known as Pneumastop, is a combination of the well-known Pneumafil used on spinning frames and an electric-eye stop motion. When an end comes down on the roving frame, it is sucked through a tube into a duct. At the collection end of the duct, the lint breaks the beam of an electric eye and an electronic knock-off shuts power off the motor to stop the frame.

Key points of the system are shown in the accompanying pictures.

The cost of Pneumastop will be in the neighborhood of $1,500 per frame. Since the big part of the cost is in the working parts, a long frame will cost very little more than a short frame.

According to Pneumafil, mills may find it practicable to revamp their old methods of work assignment on roving frames. The company says, "An operator's job is divided between doffing, creeling, cleaning, and piecing. Regardless of what the operator is doing, he must always be alert for broken ends and 'snowstorms' caused by a bunch of ends being knocked down."

With Pneumastop "practically 100% effective" in sucking up broken ends, the roving-frame operator is relieved of what has always been the major limiting factor in assigning roving tasks. Pneumafil thinks it will be possible to reassess work assignments to make full use of teams of specialists (creelers, doffers, end piecers, and cleaners), rather than assign a certain number of frames to an operator.

Still further savings could be made by rearranging machinery to obtain better flow (with shorter hauls for moving sliver and cans) from cards to drawings to roving frames.

Advantages gained from the use of Pneumastop are said to be:

1. Lower unit cost through work reassignments, better frame layout, less waste, and increased production in spinning, spooling, and weaving as a result of better-running roving.
2. Better quality as a result of fewer defects such as slubs, gouts, and doublings.
3. Better waste control and better utilization of roving waste.
4. Better-running work.
5. Reduced training time for operators because of task specialization.

For installations where it is preferable not to knock off the frame when an end comes down, Pneumastop can be installed without the stop motion. It functions then, as Pneumafil does on a spinning frame, only to suck the broken end away from the rolls and prevent it from lapping over into an adjacent end.

Pneumafil Corp. estimates that the jobload of a roving tender can be increased from 20% for coarser hank rovings to 100% for rovings finer than about 2.00 hank. (P. M. Thomas, *Textile World*, page 106-107, September 1952.)

NEW TESTER HELPS IN CHOOSING COTTON FIBERS TO GET FABRICS THAT WEAR WELL

A new instrument for measuring both tensile breaking strength and elongation (stretch) of small tufts of cotton fibers has been developed by the University of Tennessee Fiber Research Laboratory in Knoxville, under a research contract sponsored by the U. S. Department of Agriculture. Fiber elongation is important in the ability of fabrics to stand hard wear.

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As in other practical testers, a small tuft of fibers is gripped between two pairs of specially designed jaws spaced a short distance apart. By a pendulum-type mechanism an increasing load is applied to one pair of jaws until the fibers break.

Dr. G. E. Hilbert, chief of the Bureau of Agricultural and Industrial Chemistry which supercised the contract through its Southern Regional Research Laboratory in New Orleans, said that cotton buyers and breeders can use this instrument to get more accurate information on fiber properties that most affect the wearing qualities of cotton fabrics.

The new tensile tester has the main advantage over previous fiber testers of measuring both tensile strength and the elongation or stretch obtained prior to break. Since fiber elongation is an important factor in the ability of fabrics to stand hard wear, the tester should prove valuable in selecting cottons especially suited to this use. The new Stelometer also features improvements in speed of operation and accuracy of results that are essential in routine testing of raw cotton at a mill. It should be useful to breeders in their efforts to develop cottons for specific purposes.

Dr. Kenneth L. Hertel, director of the Fiber Research Laboratory and head of the Physics Department at the University of Tennessee, terms the new instrument "as significant to the cotton industry as the earlier development of the Fibrograph and the Arealometer." The former measures fiber length and the latter, fiber fineness. These instruments were also developed at the University's fiber laboratory for rapid determination of fiber properties.

Dr. C. H. Fisher, director of the New Orleans Laboratory, said that the development of this instrument resulted from fundamental research to obtain new information which would aid in improving the utilization of cotton fiber. Rollin S. Orr of the Southern Laboratory was the specialist representing the Department of Agriculture at the University on this project. (*U. S. D. A. Release* 1693.52, August 5, 1952.)

BOBBIN CONVEYOR CONTROL PAYS OFF

Automatic regulators have proved helpful in controlling the quantity of bobbins fed to hoppers which carry full bobbins to filling conditioners at Cone Mills Corp.

Belt conveyors, extending through openings in the wall (see accompanying illustration) deliver filling to the feed hoppers. When operation of the conveyor belts was manually controlled, filling piled up in the hoppers and spilled over onto the floor. This resulted in large amounts of bruised and dirty yarn.

C. K. Shumann, an employee in the filling conditioning room at Cone's White Oak Plant, Greensboro, North Carolina, conceived the idea of controlling the flow of bobbins to the hoppers automatically by installing a rod across the top of each hopper, mounting it in bearings at each end, and attaching a long feeler finger to the center of the rod. When the hopper is empty, or nearly so, the feeler finger hangs downward. As the bobbins fill the hopper, they push the feeler up, thereby turning the rod in its bearings. The rod is attached to a cam lever which actuates a roller type trip switch and the switch controls the motor driving the feed belt.

As soon as the hopper is full and the feeler is raised to a nearly horizontal position, the switch is tripped, and the filling bobbin conveyor is stopped until the hopper level is lowered. (*Textile Industries*, September 1952.)

TEXTILE PROGRESS THROUGH RESEARCH AND EDUCATION

Eight years ago, twenty-three leaders of the textile industry met in New york and founded the Institute of Textile Technology. While this experiment was the first of its kind to these businessmen, the organization and methods developed during the ensuing years have been ingenious and enviable. The basic concept held by these men was to build a plant that would produce ideas, information and inventions. However as there was no known pattern by which men could be trained to apply research to textile mills, the education of men became the second objective of the Institute.

A 15-acre estate at Charlottesville, Virginia, was purchased for the site of the Institute. After a short while, the Institute was chartered by Virginia as a full-fledged graduate school. As such it still operates, but in a highly unusual form, for here the emphasis is upon research.

The management of the Institute is composed of three groups; the Officers, a Board of Trustees which includes twenty-three of the nations leading textile manufacturers, and a Technical Advisory Committee also composed of textile executives.

To give some idea of the broad scope of the projects conducted by the three major divisions of the Research Staff: Physics, Chemistry, and Engineering, the following are just a few of the outstanding contributions and studies which have been made.

Precision measurement of textile uniformity

and other quality factors, including the development of electronic quality measurement instruments. Research on opening and cleaning raw cotton; the effects of excessive heat during ginning on cotton , and of aging of stored cotton.

Causes of streaks in dyed fabrics. Sources of tar-spots in finished cotton fabrics and methods of removal. This study showed these spots could actually come from resin sacs in tiny leaves or burrs, which become mixed with the cotton during harvesting.

Creation of a new product for the housewife, commercial laundry, or textile mill, which simultaneously cleans fabrics and makes them more resistant to future soiling.

Development of more satisfactory methods for the dry cleaning of cotton fibres. This is most important because of the upgrading of the cotton apparel market and the use of cotton fabrics in evening gowns, expensive daytime and afternoon dresses and men's lightweight suits.

Many other research projects and studies have been completed or are in process of advancement.

"The Institute offers the textile industry services that are invaluable in a highly competitive, fast moving age," says Dr. J. L. Vaughan, President of the Institute. He states further, "There is always a place in textiles for the imaginative individualist; but research teams in an organization like the Institute of Textile Technology can bring more 'know-how' to bear on a problem than can anyone working alone."

Aberfoyle is proud to have long been a member of the Institute of Textile Technology and to have long been a member of the Institute of Textile Technology and to have had officials of our company selected to serve on the Board of Trustees and the Technical Advisory Committee.

A number of projects started by our product development department have been turned over later to the Institute's research staff for successful completion. In this way the ITT's staff augments and complements our own as it does that of many other of the nation's leading Textile Manufacturers. (*Aberfoyle Bulletin*, March-April, 1952.)

HOW BIG ARE PROFITS

Everybody likes to play guessing games. The storekeeper who first put a jar of dried beans in his window and invited all comers to guess the number it contained, found that out. Even today the old beans-in-the-jar contest will draw a crowd. Some people like to play bean-guessing games with company profits, although the true facts are available, among other places, in the daily newspapers. And, more often than not, their guesses are wide of the mark. A few months ago, the Opinion Research Corporation made a survey to find out what people were thinking and saying about corporation profits. One of their questions was: "What per cent profit on sales do you think the average manufacturer makes—after paying taxes and all expenses?" Answers ranged all the way from a low of 3 per cent to a high of 40 per cent. The average of 6.2 per cent on sales. That's a little better ever, that in 1950 U. S. manufacturing firms made an average of 6.2 per cent on sales. That's a little better than 6 cents profit on every dollar of goods and services sold.

Actually, according to Department of Commerce figures, in the 21 years from 1929 to 1949 the highest net profit percentage recorded by U. S. manufacturing firms in any year was 1929, when it was 6.7 per cent. The average return for the 21 year period was 3.6 per cent.

Next in their nation-wide survey the poll-takers asked people for their ideas of profits made on such commonplace products as meat and automobiles.

Guess: Their average guess on meat packers' profits when the housewife pays $1.00 for beef was 23 cents. Of those questioned, 52 per cent said the packers' profit was too high.

Fact: Meat packers make approximately 1 per cent on the average, the lowest net on sales for any of 46 industries.

Guess: Manufacturer's profit on a $2,000 car is $450 (the average of all guesses). Of those who answered, 53 per cent said the auto maker's profit was too high.

Fact: The public's guess of $450 far outranges the average profit of $100 to $150 which the auto maker realizes.

When people were asked what part of the money companies earn is paid out in Federal income taxes, the average estimate was 35 per cent. The fact is that many large companies now pay out more than half of their profit in taxes. Last year, for instance, Joanna Cotton Mills Company's income tax bill was approximately 54% on total earnings before U. S. and South Carolina's taxes on income.

While some people have mistaken ideas of how big industry profits really are, the survey found that the great majority have a better understanding of how profits benefit our whole economy.

Asked how people in general benefit from industry profits, one third of those questioned cor-

rectly stated that profits meant better living standards and "good times." Twenty-three per cent said profits enabled companies to pay higher wages, while 15 per cent pointed out that profits create employment and mean that companies can hire more people. Other benefits of profit mentioned included business expansion, money for research and new products, dividends for stockholders and funds for pensions and other employee benefits.

Most people realize that profits provide the "seed money" that is plowed back into business, providing the jobs, plants and equipment that will give all of us an even finer standard of living in the future. (*The Joanna Way*, August, 1952).

INFORMATION RACKS PROVIDE HELPFUL SERVICE TO HUNTSVILLE'S EMPLOYEES

For the past year we have made available to our employees information in booklet form which is of direct interest to them. Subjects of the individual books range from "How to Save Money on Food" and "The Home Work Shop" to Seed and Vegatable Catalog" and "How much Profit should a Business Make."

The printed literature is not mailed to the employees; it is available to them and is for their selection from information racks sultably located for their convenience. We have found that the best stations for the racks are on stair landings or where the outgoing shift operatives can pick the literature up on their way home.

Cartoon, comic booklet, and health materials go fast, with the "How To" series running a close second. Not all of the heavy reading matter is taken immediately, but over a period of time we find that all types of literature in the racks have good circulation.

Only favorable reaction has come from our employees on this service furnished by the company; however, the best indication that we get is the speed with which the racks become empty. It is a worthwhile project.

Cost of the service to our plant, which has 1450 employees, is slightly over two thousand dollars anually.

The booklets are sent to us every ten days by the National Research Bureau, Inc., which also serves one thousand other industrial organizations. Thus, a fresh supply of booklets is always on hand. Any literature which has not been picked up by the employees may be returned to the supplier.

Since the booklets are designed as self-help information for the employees—not the employer—we feel that anything which helps our employees to maintain a better standard of living and assists them in understanding the economics of life and the problems of management, will help everyone.

A preview of the literature reaches us 30 days in advance of the actual copies for the racks; sometimes we find it helpful to pass the previews along to our supervisors and key men so that they will be posted. Otherwise an employee might spring a question on the supervisor which he is not prepared to answer, because very often the booklets are discussed among the employees and with the supervisors and management.

We have found that nine subjects per month, or about three subjects every ten days, provide the best balance for distribution of the literature. A typical example of two consecutive 10-day distributions would run about as follows:

First 10-day literature—baits to use for fishing, home dressmaking, and hidden taxes; second 10-day literature—interesting hobbies, value of loyalty to the company, and preparing fresh vegetables.

About half of the booklets are prepared in two colors and half in one color, both on medium priced paper stock. The helpful information is being offered, not the beauty of the books or expensive covers.

Subjects for the information racks are pretested before they are sent to us by the supplier. We do not govern the subjects and wouldn't want to—sometimes subjects selected by management could be objectionable to employees.

Our employees know that we are not just trying to distribute propaganda to them; the subjects are of real interest and assistance to them, and they like the service rendered by the company. If they didn't they could pass by the racks and leave them full. (A. D. Elliott, *Textile Industries*, page 94, 95, August 1952.)

CARD SLIVER VARIATION CAN BE REDUCED

An important prerequisite in making even card sliver is a uniform picker lap. Without a good picker lap it is impossible to make uniform card sliver, no matter how perfectly the cards are set or whether the clothing, lickers-in, and bearings are in perfect condition.

Assuming that the picker laps are within standard tolerances, there are several important considerations which may help control the uniformity of the card sliver.

If feed roll bearings or shafts on the card are worn, weight cannot be applied uniformly to the

roll, and the lap will be fed to the licker-in in alternately thick and thin pieces, thereby producing lumpy sliver. Unevenly distributed weights on feed rolls also cause uneven feeding and lumpy sliver.

Feed roll bearings should be replaced if they do not fit snugly to the shaft. Worn feed roll shafts should be replaced or built up and machined to the proper size, and feed roll weights and lever arms should be thoroughly checked each time the cards are ground and set. Feed rolls and weights are often the most neglected part of the card.

Dull card clothing or clothing loose on the cylinder or foundation has tendency to load excessively and causes a wide range of sliver weights between stripping cycles. Continuous strippers help to prevent loading, but loose clothing will load and streak the flats although the stripper may be functioning properly. All card clothing should be examined periodically and repaired as soon as a defect is found.

Dull or rusty flats also become loaded easily and cause variation in the sliver. After the flats are ground, they should be checked carefully to maintain the correct relationship between heel and toe. If the grinding drum is not set properly, or if the flat holders are worn, the flats may be ground in a wedge shape, thereby spoiling the heel and toe alignment. Poorly ground flats allow lumps to pass on to the doffer, thereby producing uneven sliver. Licker-in clothing should be sharp and uniform over the entire surface. High and low places on a licker-in prevent accurate adjustment and allow lumps of fibers to reach the cylinder.

If the stock is not properly broken up by the licker-in, the fibers cannot be separated properly by the action of the flats and the cylinder, and the web will contain thick and thin places. A good sharp licker-in, correctly set, is essential to good carding.

If screens are in poor condition, or if they are not accurately adjusted, too much or too little waste may be extracted from the cotton. If screens are broken or damaged, the stock may hang up on the rough places until it drags the cylinder and is plucked off and placed on the doffer. Screens that are not set the same on both sides may allow thick and thin places to go through and into the sliver. Also an improperly set screen interferes with air currents which play an important part in removing waste from the stock.

Feed roll, licker-in, doffer, cylinder, and calender roll bearings should be in good condition—free from wear, clean, and adequately lubricated. Otherwise it is impossible to maintain uniform and accurate settings which are necessary for good carding.

A regular stripping schedule is necessary to maintain uniformity if stripping is done manually. Any variation in the stripping cycle will affect sliver uniformity. Alternately short and long stripping cycles cause the sliver to run correspondingly light and heavy. (By Henry Paul, *Textile Industries*, August 1952, pages 96-8).

CLOTH MILLS STEP UP SCHEDULES AS RETAILERS RESTOCK THEIR SHELVES

King Cotton is a merrier old soul these days.

Reason: Textile pipelines, which were clogged with too much cotton cloth at the beginning of this year, now need refilling.

Increased mill production south of the Mason-Dixon line, where roughly 80% of this country's cotton spindles are located, is testimony that retailers big and small are stepping up purchases of cotton goods. A spot check shows that only a handful of smaller mills are still working on curtailed schedules.

Big Dan River Mills, of Danville, Va., recently went from a five-day, two-shift week to a five-day, three-shift week. Greenwood Mills, of Greenwood, S. C.., has added shifts on a sixth day.

The eight mills belonging to big Erwin Mills, of Durham, N. C., went back on a full five-day week about six weeks ago, according to Magruder Dent, president of Joshua L. Bailey & Co., Erwin's selling agent. Other major mills report similar step-ups in production.

Order books are filling up fast, too, Deering Milliken & Co., sales outlet for 29 Maine-to-Georgia cotton, wool and synthetic mills, reports its cotton plants booked almost solid to the end of the year. "Last year at this time we were operating pretty much on a hand to mouth basis," a Deering official recollects.

A. A. Dryspool, vice president of Wamsutta Mills, of New Bedford, Mass., figures the company's order backlog on staple cottons like broadcloths is 35% bigger than a year ago. Spring Mills of New York reports its order backlog is running 20% to 25% ahead of a year ago. Another big mill asserts it's taking orders as far ahead as May, 1953.

Chief reason for the renewed activity seems to be that retailers have managed to unload the tremendous inventories built up during their

Korean war-spurred buying sprees of late 1950 and early 1951. Many retailers have even wound up understocked. And some nationwide department store chains—J. C. Penny and Allied Stores Corp.—testify they've "cut to the bone" their stocks of dresses, sheets, towels, lingerie, work clothes, dress and sport shirts, and other cotton goods.

Nation-wide figures on department store stocks, compiled by the Federal Reserve Board, show that inventories of cotton yard goods dropped 33% between April, 1951, and July 1 this year. In the same period, stocks of women's and misses' dresses, a good percentage of which are made from cotton, went down 27%. And household textiles such as towels, sheets, blankets and spreads plunged 37%.

While the retailers were busy getting rid of stocks already on hand, mill operations were bogged down for lack of orders. Cotton consumption by U. S. mills in the seven months ended July 31 dropped about 14% to 5,351,00 bales from 6,252,000 bales in the previous seven months. However, increases in mill operations in the last six weeks indicate raw cotton consumption is on the way back up.

The recent sharp pickup in the sheet and towel segment of the industry—sheets and towels use more cotton (854,000 bales in 1951) than any other single segment—is being taken as a surefire omen of continuing improvement by the cotton trade.

Cannon Mills of Kannapolis, N. C., World's biggest sheet and towel maker, has just started taking new orders again after a 10-day halt. "We had to stop and check inventory to see how much we had left to pass around." says an official of the company. Big Pacific Mills, headquarters in Boston, is still "off the market" on flat percale sheets because of a surge of orders; Spring Mills of New York is withdrawn on all lines for the same reason.

Cannon has increased sheet prices four times in the last two months. The company's biggest-selling percale brand is tagged at $27 a dozen wholesale now, compared with $24.28 on May 26—though it's well below the record price of $32.47 set on October 27, 1950. Cannon is generally regarded as the sheet and towel price bellwether.

Cannon has hiked towel prices twice since July 14 for an overall 8% advance. One popular type of white, small-sized bath towel has gone from $4.25 to $4.60 a dozen wholesale.

A Cannon official claims: "We can't deliver popular-priced towels ordered now before late September or maybe early October. Two months ago we could have supplied them immediately."

One of the most reliable cotton indicators is the business activity along Manhattan's Worth Street, where millions of yards of cotton fabrics for apparel, household and industrial uses often are traded in a day. They include, among others, print and broad cloths and sheetings for dresses, shirts, curtains and book bindings; twills, drills and jeans for work clothes; ducks for heavy industrial and military use.

Cotton cloth prices on Worth Street have been inching higher gradually since late spring. A popular print cloth selling at a "depression" low of 19 cents a yard in mid-May has moved up to 21¼ cents, although it's well below the 28 cents recorded early last year. Mills that for months have been finding only hand-to-mouth buyers now are getting orders as far ahead as the first quarter, 1953, in some cases.

For example, Woodward Baldwin & Co., sales agent for Abney Mills in Greenwood, S. C., says it's sold up on print and broadcloths for the next 4½ months, compared with 2½ months this time last year.

Some major mills declare they're not too keen on accepting orders for first quarter, 1953, delivery now because of the upward trend in prices. An executive of one, for example, asserts many of his firm's cloths are selling at cost or slightly above, and he doesn't want to take orders far in advance until he's assured of a better profit. The popular print cloth that's selling for 21¼ cents a yard now costs about 20 cents a yard tomake in a well-run mill.

Another mill man recalls chatting with a buyer in his office the other day: "He wanted cloth for delivery early next year, and as I got cooler on selling he got hotter on buying."

The pickup that began in Worth Street last spring has been felt chiefly in print cloths, but it's also been spreading to sheetings, twills and other types of cloth. A popular sheeting, for instance, has gone from 18¾ cents a yard in late May to 19½ cents at present.

Southeastern Cottons, Inc., sales agent for Avondale Mills of Sylacauga, Ala., affirms sheetings and drills haven't enjoyed the same increases as prints. But Southeastern's sales in those first two categories are running perhaps 15% better than a year ago, according to H. C. Albaugh, executive vice president. (The *Wall Street Journal*, August 26, 1952.)

HOW TO INCREASE CAPACITY OF PRESENT CARD-SLIVER CANS

A digest of methods used by mills to increase can capacity was made of the report from the Spring Meeting of the Alabama Textile Operating Executives meeting at Auburn, Alabama. The four methods are as follows:

1. Buy nylon trumpets.

Mill T did this at a cost of $2.75 each, with no charge for labor to install them. The result: an extra pound of sliver in the can even though the can doesn't look as full as before. Very little difference was noted in sliver variation.

2. Change can-table tube-gear ratio.

Mill F did this, at a cost of about $5.00 per card. From one to two more pounds of sliver is going into every can now.

Mill M also changed the can speed and increased pounds per can from 11 to 13 at a cost of $7.50 per card.

3. Put springs on the delivery roll.

Mill L did this, at a cost of $1.00 per card. Pounds per can were increased about 33%.

Mill M also tried springs but found that a hard core was formed in the center of the sliver. Also, grooves were worn in the calender rolls on the cards.

4. Install Tongue-and-groove rolls.

Mill M did this; the cost was $12.00 per card, and can capacity was increased only ½ pound per can.

(*Textile World*, page 113, August, 1952.)

NEW FIBER CONDITIONING MACHINE

This invention relates to improvements in apparatus for conditioning textile fibers.

The principal objects of the invention are directed to novel apparatus for conditioning textile fibers of various kinds for the elimination of foreign substances therein.

Fibers of all kinds, particularly animal fibers, used in the textile industry contain a considerable amount of foreign substances or bodies and it is to the removal of these that the invention is particularly directed. Such foreign bodies must be removed for the desired and proper processing of fibers and to that end the apparatus hereof is constructed and arranged to be located adjacent a carding machine or machines to break up and remove these foreign bodies.

As a special feature of the invention the apparatus includes a plurality of pairs of draft rolls for drawing fibers, as for instance in sliver form, into the form of a thin web which is acted upon by pairs of extender rolls that act on and break up the foreign bodies or substances without injury to the fibers and in combination therewith means is provided to adjust the spacing of the pairs of draft rolls.

Fibers of different lengths or staple for the most economical and efficient operation require that the draft rolls be spaced apart a distance to accommodate a cehtain length or staple and the novel construction of this invention accomplishes the same with ease and readiness. (U. S. P. 2,589,797, March 18, 1952.)

ADDRESS OF PRESIDENT OF SOUTHERN TEXTILE ASSOCIATION

Exchange of ideas may mean the success or failure of a mill or an entire industry. Here's an example given by Professor Jack Bogdan, of North Carolina State, in the 1951 Fall Northern North Carolina-Virginia Division meeting at High Point, N. C. Prof. Bogdan made a splendid talk on his trip to Europe and the mills he visited there. He was speaking on why European mills are below American production standards. They were worried over this, and practically all asked why; Professor Bogdan then pointed out that they were all very secretive, did not make visits to other mills and would allow no visits from other mill men. He went on to say that he saw nothing in his visit which was a secret or even that he would care to take back with him. The exchange of information, according to Jack Bogdan, is a psychological matter and maybe that is what makes our textile industry what it is, and maybe the lack of it is what keeps the European industry behind and always will. One man does not have all the answers to anything and you can't get everything by reading the trade papers. It takes an exchange of information in meetings like this.

To illustrate still further the value of interchange of ideas, I'd like to give a personal experience. Sometime ago we at Joanna had just completed installaton of our Regnery warp spindle adapter and we were certainly pleased with its spinning performance. However, the larger yardage on the warp bobbin required changes in our spooling to more efficiently handle this new, bigger package. We did quite a lot of figuring, bought new sections to lengthen out our spoolers, then sat back to rake in some nice juicy savings. It didn't work out like that right away. We just had trouble on top of trouble, and it kept getting worse. About that time the Southern Textile Association was having its convention here at the Ocean Forest and I came down with our crowd, hoping that the lightening would strike, solve

our problem, and all would be well. The lightning didn't strike, but I had the great pleasure of sitting on the cool front porch of this hotel, in a nice deck chair and talking for about three hours with Mr. McElroy, of Barber-Colman, who gave me the benefit of his vast experience in this field. I made copious notes and went back home armed with plenty of ammunition to attack our problem. Thanks to this and diligent work on our behalf, we finally licked our problem and got out of the dumps. I shall always feel that in this instance I received a wealth of good practical advice while seated on a cool, shady, sea-view veranda. It certainly was acquired as painlessly as one could absorb it.

Now for the problem uppermost in the minds of all of us at the present time, the problem on which all of us want help from these meetings, the textile depression now gripping our industry. This is not a new thing, for many here have passed through similar times when the selling price of cloth was muderously low. This crisis, however, is unique in the respect that most of our mills are in topnotch physical condition due to the amazing technological improvements in textile processing machinery made since World War II. The Southern textile industry was quick to accept and install such equipment and we are all very proud of our splendid plants. Now then, since we are all—or nearly all—on the same starting basis as far as plant goes—we have to look elsewhere for our margin of superiority. It can only be gained by the personnel of one's mill. Stated another way, it plainly means that man and not machine is still the dominant factor of success. It means that a group pulling harmoniously together as a team will be hard to beat.

We all want to cut costs, to improve quality, to make money. Sometimes adversity will develop a lot of ideas that will pull our plants in the profit direction. Adversity though, doesn't always work as a good many of us have seen. We must strive to turn it to good use. A man can study, buy books, magazines, and pamphlets, that will give him a certain amount of stimulus. He can attend college grade correspondence courses which certainly will develop his mind. He can attend group meetings at which he will meet men in his line or work. This will give him access to thoughts lighting up ideas already dormant in his mind.

My theme for this meeting, then, is how to use our personnel to best advantage, to build up a team of top-notch workers, alert to every opportunity to improve themselves and the way they run their jobs.

We ourselves must be enthusiastic and progressive to keep those around us on their toes. Knowing our job thoroughly is only half the battle. We must develop the team spirit, respecting the worth of each individual and expecting the best effort of each individual if we are to succeed in our ambition "The most expert superintendents and overseers in the textile industry." (J. L. DeLany. *Textile Industries*, August 1952, pages 67-68.)

COLOR SHADING AND GRADING

Textile color quality control begins but unfortunately does not end in the dyehouse. Even though the dyer has carefully established his dye formula by the critical visual color matching method under ideal artificial daylight lamps, there are color variations in the production run due to such factors as dye exhaustion, finishing variations, temperature changes, fiber variations, pH changes and a host of others.

To assure the detection and correction of production color variations before they get beyond control, color-corrected illumination should be employed at the key textile perching and inspection operations. In this manner, reasonable control of the color variations in the end product can be established and maintained.

However, depending on the color and type of material, it is often necessary to further improve color quality and assume customer color acceptance by grading the material and placing it into lots of uniform color. This important color operation can be carried out most effectively and consistently under artificial daylight illumination. Good color control throughout will not in many instances eliminate the desirability of color grading the production, but it will certainly materially reduce the resultant number of grades or shades. A practical example of how controlled artificial illumination can serve as a useful tool for the color grading of textiles is illustrated by the Lane Cotton Mills story.

In the face of a highly competitive market the management of the Lane Cotton Mills in New Orleans, searched for a way to improve color quality and still reduce production cost. A completely artificially illuminated shading room was built.

The shading room is open at both ends and is illuminated with artificial North Sky daylight produced by two banks of Macbeth Daylight Skylights which are inclined at an angle and suspended from above. Each bank of daylight consists of three six-foot units making a total of six

Skylights. A false ceiling was built in and is painted white. The two walls are a light neutral gray. The windows have been opaqued and no other source of illumination is present or can enter the shading room.

The production to be shaded enters at one end of the shading room and is divided in half and moves down each side of the room. The shaded material moves out of the opposite end of the room into the shipping department. Two shaders, one working each side of the shading room, shade approximately 65,000 yards together per shift. The shading room is currently being used two shifts per day, and approximately 130,000 yards are shaded daily.

The shaders prefer the artificial daylight because the illumination duplicates natural daylight and is uniform and consistent from hour to hour and day to day, regardless of weather conditions. Furthermore, the late shift is not hampered by trying to shade in the waning hours of natural daylight and then having to complete the work under whatever general illumination is available. The shading done by both shifts in the Lane shading room is the same because the work is done under identical conditions for seeing color.

The artificially daylighted shading room at the Lane Cotton Mills has been in operation for approximately ten months. During this period, the shading for quality, with special reference to uniform shades, has shown marked improvement. Labor savings have been recognized principally because shading has been carried on regardless of the weather. Prior to the installation of artificial daylight illumination, color shading operations were suspended on dark, cloudy days, and the installation has facilitated the movement of materials. Color shading operations are no longer restricted to the North Side of the plant along side of windows but may be located and designed to expedite material handling.

The Lane story points out many possibilities for better textile quality control through controlled illumination. It may also bring to mind the question: "How can the simple mechanism of light improve color quality control?" This question may be answered by pointing out the underlying principles as well as indicating the relationship of light and color. (Warren B. Reese. *Textile Industries*, page 87, 88, 89, 90, August 1952.)

ASME TEXTILE DIVISION TOLD OF TWO NEW WOOL BLENDING SYSTEMS

The resultant impact of the cost reductions possible in properly designed blending systems makes this subject of vital interest and significance. During recent years the increase in the cost of labor and the need for more uniform laying, oiling, and picking of the blend have accelerated the development of new blending systems. Two such systems are described here.

For Large Batches. One installation for handling stock in large batches is arranged with a series of several automatic weighing feeds, each one taking one kind of stock in bulk, weighing it out continuously and making the one stock into a uniform layer. This layer is of the proper percentage as set for the blend. These weighing feeds are under the control of a monitor system which, in case of a light dump or skidded dump, immediately shuts down the entire line of feeds and indicates with a light the feed is at fault. The entire line automatically shuts down before the light dump can be placed on the already weighed layers.

These uniform layers of stock are now automatically placed one on the other on a slowly moving transverse apron which presents the several layers to a breakdown picker. This picker is designed to handle large quantities of material with little or no fiber fracture, but with the teeth of the cylinder combing across the face of the layered weighings so that a portion of each layer is taken uniformly as the cylinder works across the face of the material. At this point the emulsion is placed on the layers through controlled flow meters so that the exact proportion of emulsion to stock is as required throughout the run.

The material so picked is fed through a coiling condenser to the primary magazine storage bin, 10 ft. wide x 10 ft. high x 45 ft. long, over which is placed a reversing roll distributor. This patented device makes possible the re-blending of the picked stock over designated areas automatically and at a capacity equal to the discharge rate of the picker—usually approximately 5,000 pounds per hour. The use of this bin, which involves a new engineering principle of laying stock automatically, is responsible for the great saving in direct labor that is possible in these types of blending systems.

The continuous system discharges the blended material directly to the card feed through an overhead reversing-apron distributor. This distributor consists of a series of over-lapping aprons with the point of overlap located over the center of the card feed. These aprons start and run in one direction, or reverse as required, to place the mix in the feed calling for stock. They

operate only when the card feeds call for stock and when all feeds have the right amount of stock the aprons stop. This distributor is very effective when all the cards operate with the same mix. It not only is a labor saving device, but keeps the cards operating at their efficiency and capacity.

Another installation for blending stock for thirty sets of woolen cards in small batches (none in excess of 5,000 pounds each, with the average around 1,500) employs most of the equipment described in the previous system, but the arrangement is somewhat different because we are able to bring each and every batch to a complete rest before any subsequent operations are performed. Here all of the components of the batch are placed near the station of the initial machine in the line (a bale breaker) and the components are thrown into this bale breaker one at a time until each has been consumed. The bale breaker in turn breaks down the baled fiber into such sizes that it can be fed to the blending picker, which picks the stock as presented to it, and in turn through a suction condenser to the primary magazine bin with a reversing roll distributor.

The apron of this magazine bin remains stationary until the entire batch has been picked and distributed in this magazine bin. When all of the batch has been deposited in this bin, the stock is moved forward into the secondary magazine feed at the rate of 15 ft. per minute until all has been placed in the secondary bin. At this point the floor apron of the secondary magazine bin is slowed down to the normal discharge rate, where the 10-ft. pile is broken down across the face with a patented breakdown roll arrangement by which it is discharged onto the cross apron which feeds the second blending picker. (By Harmon B. Riehl. *Textile Industries,* August 1952, pages 114-116.)

STRETCHING—AUTOMATIC MOTIONS TO THE LIMIT

How automatic can an automatic machine get? An answer to that might be—the absolute limit is reached when every phase of the operation and the product itself can claim the distinction of having been "untouched by human hand."

Take the Whitin-Sshweiter automatic filling winder, for instance. Here is a machine that involves a minimum of supervision and labor. A review of its functioning would indicate the vast degree to which pure mechanics have supplanted human skills on this machine.

It will feed, wind, and change bobbins. It will catch slubs, cut tails, and if desired, tie broken ends. It will wind bobbins with full control of diameter, traverse, taper, bunch, and yarn tension. Also, there are attachments for waxing yarn or marking bobbins, and it will stop when anything goes wrong.

Though this winder approaches full robotism, could it be brought a step closer by any manner or means? And would the cost of the manner or means be justified on the basis of economies or product improvement it might achieve?

Production experts, in concurrence with engineers at Bachmann-Uxbridge Worsted Corp., thought so. In line with Uxbridge's uncompromising policy of ever greater plant efficiency, the mill's development staff accepted the challenge. Their first action was to survey winding operations and related influences on the weave room.

In brief, this was the layout of the winding department: Two automatic winders, each composed of four sections of 15 deliveries (total—120 deliveries), faced on a common aisle. Their combined output averaged 100 bobbins per minute of various counts and colors of yarn.

Baskets beneath deliveries received bobbins as they were doffed from spindles. When the baskets were full, a filling carrier man brought them to an intermediate station in the weave room where the contents were reloaded, according to style, in bobbin boxes.

A winder operative and helper ran the two winders, inspected yarn and bobbins, creeled supply packages, and made minor adjustments. Personal carrying filling baskets away from the winders interfered with winder operators. 100 per cent inspection of bobbins by the operators was prevented in the confusion of moving baskets around, thus inviting mixed filling and bad bobbins. Naturally, the task of quality control fell upon battery fillers and increased their work load.

Results of the survey were submitted to the machine development department at Uxbridge. Into the hopper went a few notions and, after a vigorous twirl around, out came an auxiliary that brings the winder a jump closer toward the ultimate goal of true automatism.

It could be described simply as a built-in materials handling system for conveying bobbins away from the winder. But, it's more than that. In the process of being conveyed, the spindles are sorted, chalk-marked, and stacked into specially designed tote-boxes which fit on Uxbridge's W-3 looms.

Four parallel endless belts which traverse the length of the winder are located beneath the spindles. The belts are divided into sections to form four separate troughs. Any number of consecutive deliveries on the winder can be grouped

and isolated from other deliveries by adjusting the partitions.

The fully wound bobbin is discharged from the spindle, guided onto one of the four belts, and is conveyed to the end of the winder. Here it is transferred to another endless belt traveling at right angles to the first.

The second belt transports the bobbin to what may be considered the primary element of the improved winder—a chalk-marking machine for color coding bobbins. Here's what happens to the bobbin when it reaches the chalk-marker.

An endless chain carries the bobbin up an incline to the level of the chalking head. In the event several bobbins are simultaneously carried to the chalker, a contact roll dislodges all bobbins but one, causing them to drop down the incline where they will again engage the conveyor.

At the chalking head, the bobbin is gripped securely, but gently, by feed rolls and is marked by a revolving roll immersed in a chalk powder reservoir. The bobbin is then discharged into a tote-box.

The chalker has four deliveries, each marked by a revolving roll immersed in a chalk powder reservoir. The bobbin is then discharged into a tote-box.

The chalker has four deliveries, each marking with whatsoever color chalk is selected. A 1/4 hp motor drives the four deliveries and their connected series of conveyor belts. Uxbridge set up two chalkers side-by-side for servicing the two Whitin-Schweiter winders.

One operator tends the combined eight deliveries extending along a six-foot front. Every bobbin from the 120 spindles on the two winders comes under the close scrutiny of this operator. An index card describing the style filling is inserted in card holders at each delivery. *Textile Industries*, August 1952, pages 100-103.)

NOW YOU CAN GRADE COTTON WITH A LABORATORY INSTRUMENT

The over-all color of machine-picked cotton contains three variable components: (1) the trash that is present, (2) graying due to weathering in the field to produce defoliation, and (3) stains produced by frost.

For an evaluation of this color problem, a series of tests was made on 146 samples of cotton with a photoelectric reflection meter with three tristimulus filters: green, amber, and blue. The meter gives a close approximation for white and near-white surfaces and is well suited for making color measurements on cotton.

The tests indicate that the meter, if properly used, can give dependable grade data, either alone or in duplicating grading by experienced cotton classers. On the 146 samples, which had been graded by two classers, the instrument graded the samples with 87% accuracy. For color alone, it was 94% accurate.

The photoelectric reflection meter Model 610, made by Photovolt Corp., has a search unit that uses a 6-v. 15-candlepower automobile headlamp as a light source. The light, collimated by two lenses, passes through a filter and an aperture in the center of the photocell and strikes the test surface in a parallel beam.

The standard search unit of the Model 610 is furnished with two photocells; but in the cotton-color tests, only one of them was used. This one, the measuring photocell, is mounted so that it registers the diffused light reflected from the test surface. The compensating photocell, which faces the light directly, was not used.

On the basis that magnesium oxide approximates ideal white, it was given the value 1.00. (Black would have a value of zero.) However, the repeated use of magnesium oxide as a standard is not feasible; therefore, an enameled plaque was used as a working standard. The plaque was calibrated by Photovolt Corp. as having the following values for the three tristimulus filters: green, 76.5; amber, 76.0; and blue, 78.5.

The first step was to use the reflectometer with the tristimulus filters on a set of U. S. Dept. of Agriculture grade standards. The search unit, with the green filter in place, was placed on five different areas of each of the 12 individual samples in the box, and the five readings were recorded. The green filter was then replaced by the amber and blue filters respectively, and the foregoing procedure repeated.

The readings on each sample for each filter were averaged, and the average of 12 samples was calculated. Average values for the grade were thus obtained for the three filters. The range of values for each filter was established for each box by noting maximum and minimum values. This procedure established a range of values and an average value for the USDA standard grades for each of the three filters.

After these standard values were established, similar readings were recorded for each of the 146 samples with each of the green, amber, and blue filters. Average values for the three filters were computed for each sample and compared with the respective values from the USDA standards.

The test sample was given the grade of the standard sample that had the closest correlation

of its three values with the respective values of the test sample. For example, Sample No. 30 showed the following average values: green, 0.540; amber, 0.582; and blue, 0.476. Since the respective values of Sample No. 30 and and USDA standard Low Middling show the closest correlation, Sample No. 30 was given the grade of Low Middling.

Care was taken to use approximately equal pressure on the search unit each time it was placed on the cotton. Since the aperture of the search unit is only ¾ in. in diameter, it was necessary to avoid placing the search unit on large trash. For non-randomized samples, readings that did not conform to a tolerance of eight scale units were repeated.

Color determinations were also made of cotton as it is processed. Measurements were made on the sample, picker, lap, card sliver, first and second drawing slivers, roving, after open boiling in 2% sodium hydroxide, and after bleaching with an 0.5% solution of sodium hypochlorite. (Thomas V. Crawley, Jr., Jack D. Towery, Billy K. Power, and Lyle E. Hessler. *Textile World*, page 100-101, September 1952.)

A NEW "FLUORESCENT INK"

A new "fluorescent ink" developed to simplify the task of machinery makers, etc., in testing for crack-detection in light metals, non-ferrous alloys, stainless steels and plastics, has been developed by the physics department of Manchester Oil Refinery Ltd., under the direction of Dr. R. Schnurmann. The new "ink" depends for its action upon deposition in surface cracks of a material which fluoresces when irradiated with ultra-violet light, and its uses were adequately shown at a recent demonstration arranged jointly between Manchester Oil Refinery Ltd., and Hanovia Ltd., Slough, manufacturers of ultra-violet and infra-red ray equipment.

Application of the "ink" is extremely simple and rapid; only 2 mins. are required to prepare and inspect a typical degreased test piece. The indication produced is clearly visible to the naked eye, the cracks showing up in brilliant green colour when the test piece is examined in ultra-violet light.

Typical applications include aluminum and magnesium alloys which form structural members of internal combustion engines, turbine blades, which can be inspected in situ and welded plates or structures which may have shrinkage cracks or porosity. Plastic materials, particularly plastic insulators may also be easily and quickly examined. Further applications include inspection of alloy pistons, stainless steel parts and the detection of cracks, etc., in hydraulic systems.

The piece to be tested is dipped into "Glo-Mor" fluorescent ink which is a true solution and does not require any agitation. Alternatively, a few drops are poured over the surface of the test piece. After allowing approximately 1 min. for the surface to become dry the impregnated test piece is inspected under an ultra-violet light source (e. g., a Model 15 Hanovia lamp). Surface cracks reveal themselves by their brilliant green fluorescence. The cracks are sufficiently clearly defined that they cannot be confused with the tide marks of the fluorescent ink. However, to remove the fluorescent background the test piece is dipped quickly into carbon tetrachloride which, if the piece is not left in too long, removes the redundant fluorescing materials without dissolving fluorescent from the cracks. Again, allowing about 1 min. for the surface to become dry, inspection under an ultra-violet light source shows clearly defined the pattern of the surface cracks.

It is essential with this convenient and rapid testing method that surface cracks should not be made up with oil or grease. If used engine parts are submitted for inspection it is desirable to degrease them first in either carbon tetrachloride or trichlorethylene. Where the application of carbon tetrachloride is not permissible, an aqueous solution of a detergent may be used and in this case a slight wiping action only is required to remove the redundant fluorescing material. (Anon. *Textile Manufacturer*, page 437, August 1952.)